VESUVIUS PLC

Serving customers

Annual Report and Accounts 2016

Introduction to Vesuvius

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

We develop innovative and customised solutions, to be used in extremely demanding industrial environments, which enable our customers to improve their manufacturing processes, enhance product quality and reduce energy consumption.

Our ultimate goal is to create value for our customers in order to deliver sustainable, profitable growth and provide our shareholders with 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.

- See **Chief Executive's Strategic Review** on p12-18
- See **Business Model** on p10 and 11
- See **Key Performance Indicators** on p34 and 35
- See **Risk** on p19-21

Find out more about Vesuvius at **www.vesuvius.com**

Financial Performance 2016

Revenue of £1,401.4m, a 6.0% increase on a reported basis, down 4.0% on an underlying basis[1] (2015: £1,322.0m)

Trading profit[2] of £133.3m, a 7.5% increase on a reported basis, and down 1.5% on an underlying basis[1] (2015: £124.0m)

Return on sales[2] increased by 10 basis points to 9.5%; 30 basis points increase on an underlying basis[1] (2015: 9.4%)

Profit before tax of £79.4m, an increase of 2.6% (2015: £77.4m)

Headline earnings per share[3] of 30.4 pence, an increase of 8.4% (2015: 28.1 pence)

Recommended final dividend of 11.40 pence per share, Group full year dividend of 16.55 pence (2015: 16.275 pence)

Year-end net debt[2] of £320.3m, with net debt to EBITDA ratio of 1.8x

Revenue £m	
2016	1,401
2015	1,322
2014	1,444

Trading profit £m	
2016	133.3
2015	124.0
2014	142.8

EBITDA £m	
2016	175.6
2015	161.1
2014	181.3

Headline earnings £m	
2016	82.1
2015	75.7
2014	90.3

Headline EPS pence	
2016	30.4
2015	28.1
2014	33.4

Free cash flow £m	
2016	61.4
2015	65.3
2014	59.2

1. Underlying basis is at constant currency and excludes separately reported items and the impact of acquisitions and disposals.
2. For definitions of alternative performance measures, refer to Note 4 of the Consolidated Financial Statements.
3. Headline results refer to continuing operations and exclude separately reported items.

Contents

Chairman's Statement

Overview

See **Our Strategy** on p12-18

A year ago, we said there would be no material change to the challenging market conditions we faced during 2015. This was borne out in 2016, with our key end-markets remaining relatively stable but subdued. Global steel production has been broadly flat with a decline in developed markets being offset by growth in China and India, whilst foundry markets have remained mixed, both regionally and by sector.

Despite these challenging market conditions, we have remained focused on our strategic priorities and have continued to make encouraging progress. Our management team has taken a proactive approach to adapting our business and cost base to prevailing conditions, and excellent further progress has been made in delivering our restructuring programme, with an increased annualised savings target of £35m, at a cost of £45m by the end of 2017. These carefully balanced actions have improved our profit margins, and contributed significantly to our continued competitiveness.

Equally important to our competitive positioning is the quality of service that we provide to our customers, a theme that recurs throughout this Annual Report. Our customers have always been at the centre of the Vesuvius business model. However, in challenging times, really understanding our customers' needs and responding to them becomes even more crucial. Consequently, in our recently launched Excellence programme, we selected customer satisfaction as a key metric for improvement.

We also continued our plan to embed ourselves further up the customer value chain through the development of our Technical Services business. As we integrate the acquisitions made in 2015 in measurement systems, we are developing our understanding of online data monitoring and quality assessment systems. We will continue to pursue acquisitions to build out this offering. The creation of a significant Technical Services business remains an important medium-term objective.

Events in 2016 have clearly heralded a period of significant political change in both Europe and the US. As a Board, we continue to monitor the potential consequences both on our business and our end-markets. However, we are confident that the overall strategy that we adopted at demerger, and which we continue rigorously to pursue, is the right one for the business, for our customers, for our people and for the creation of sustainable shareholder value.

Performance and Dividend

In 2016, reported sales were £1,401m, an increase from 2015 of 6.0%. Our margins improved to 9.5%, helping to deliver the reported trading profit of £133.3m. Foreign exchange trends have had a beneficial impact on our trading profit, but have also increased our reported net debt. Our business model enables us to generate strong cash flows, and we continue to focus on tight financial discipline in order to underpin our investment plans and dividend.

Our dividend policy aims to deliver long-term dividend growth, provided that this is supported by cash flow and underlying earnings, and is justified in the context of our capital expenditure requirements and the prevailing market outlook. With this in mind, the Board has recommended a final dividend of 11.40 pence per share for the year ended 31 December 2016 (2015: 11.125

See **Governance** on p62-103

pence), which would result in a total dividend for the year of 16.55 pence per share (2015: 16.275 pence), an increase of 1.7%. If approved at the Annual General Meeting, this final dividend will be paid on 19 May 2017 to shareholders on the register at 7 April 2017.

Board and Governance

The Board is responsible for setting the right tone from the top and ensuring that a robust governance structure is in place to enable the business to deliver long-term sustainable growth. As part of this responsibility, the Board continues to place great importance on furthering our understanding of the Vesuvius business by visiting key operations and meeting as many people as possible. To that end, during the year we visited our Flow Control, Advanced Refractories and Foundry production sites in Monterrey, Mexico, as well as visiting our customer, Ternium, in Monterrey. I personally visited our plants at Skawina in Poland, and at Třinec in the Czech Republic. These visits increase our knowledge and are invaluable in helping the Board to stay connected with our operations, our senior people and their teams around the world.

Encouraging progress is being made in the recruitment process to replace Nelda Connors. Nelda stepped down from the Board in September 2016 due to the increasing demands of her other responsibilities, having served as a Non-executive Director since March 2013. We are very grateful to Nelda for the active and valuable role she played during a critical period in Vesuvius' development.

In 2016 the Board also widened its focus on succession planning issues, additionally reviewing the management level immediately below the Board – both in terms of securing a pipeline of talent for future leaders of the business and encouraging and enabling our diversity agenda. This focus on succession planning at executive and senior management levels is ongoing.

The 2016 Board evaluation confirmed your Board continues to function effectively. It is well balanced, with a strong mix of relevant experience, and is very clear and focused on its priorities – setting Vesuvius' strategic direction, ensuring that the appropriate culture is embedded throughout the Group, and acting as custodians of long-term shareholder value.

Our people

One of the Board's core responsibilities is establishing the culture and values of the Group which determine the behaviour expected from our people. Our Code of Conduct was relaunched across the Group during the year, alongside the update of our independent Employee Concern Helpline. At the same time, our long-term success depends on us ensuring the health and safety of all our people and providing them with the fullest opportunities to develop and use their talents. How we are putting these commitments into action is set out in the sections on Principles, Health and Safety, Sustainability and, People and Community within the Strategic Report.

My Board colleagues and I continue to be impressed by the way in which our leadership teams and our people go the 'extra mile' to exceed our customers' expectations. Our resilient performance in 2016, the strength of our market positions and, above all, the quality of service that we offer our customers would simply not be achievable without their tenacity and professionalism. On behalf of the Board, I thank them all.

Annual General Meeting

The Annual General Meeting will be held on 10 May 2017. The Notice of Meeting and explanatory notes containing details of the resolutions to be put to the meeting accompany this Annual Report and are available on our website (www.vesuvius.com). I and all my Board colleagues plan to attend the AGM and we look forward to the opportunity to meet with as many shareholders as possible on the day.

John McDonough CBE Chairman
2 March 2017

Section One

Our Business

In this section

The Strategic Report set out on pages 2 to 59 contains a fair review of our businesses, strategy, and business model and the associated principal risks and uncertainties. We also deliver a review of our 2016 performance and set out an overview of our markets. Details of our principles, our people and community engagement, together with our focus on safety, are also contained in the Strategic Report.

Approved by the Board and signed on its behalf by

François Wanecq
Chief Executive

Guy Young
Chief Financial Officer

Vesuvius at a Glance

We are a global Group with a business model based on offering customised products, solutions and services from production facilities in close proximity to our customers.

See our **Business Model** on p10-11

See more about our **Steel** and **Foundry divisions** on p36-47

Our global presence

38 Countries

10,840 Employees

6 Continents

91 Sales offices

66 Production sites

17 R&D centres

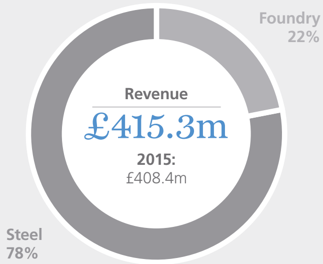
Americas

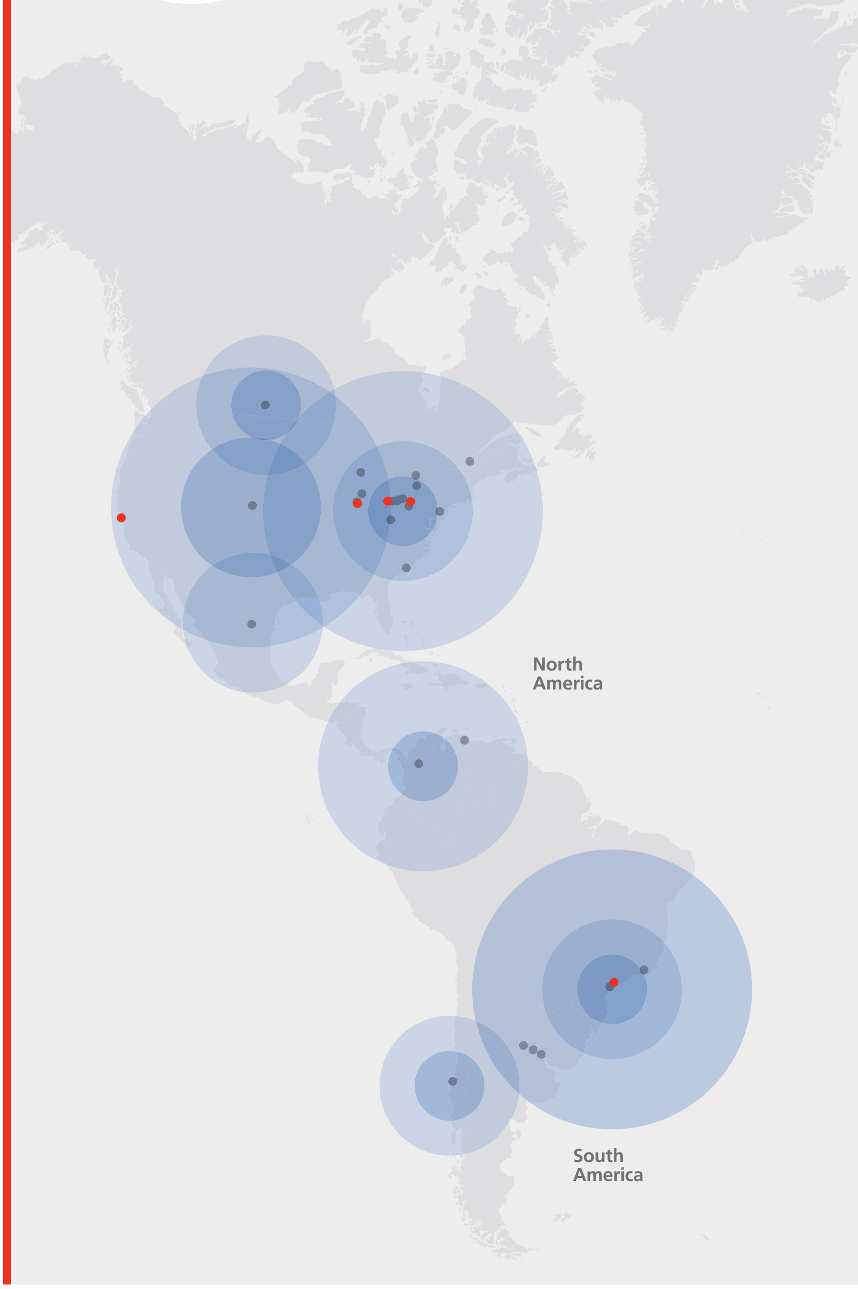
18 Production sites

5 R&D centres

3,186 Employees

23 Sales offices



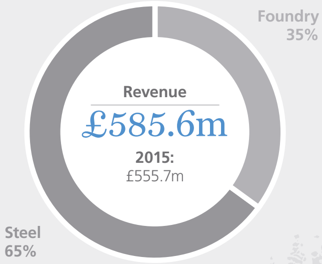


Key to map

- Production and sales sites
- R&D centres
- Proximity to customers

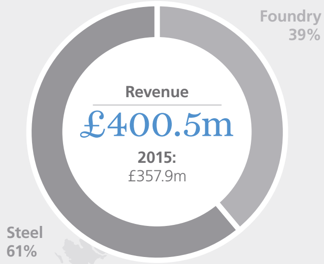
EMEA

29 Production sites	10 R&D centres
4,422 Employees	33 Sales offices

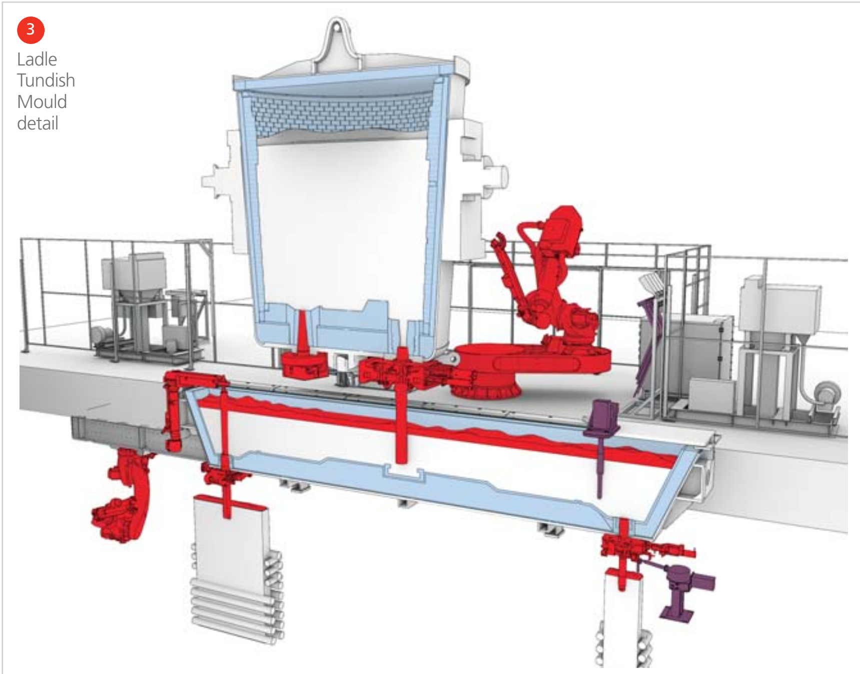


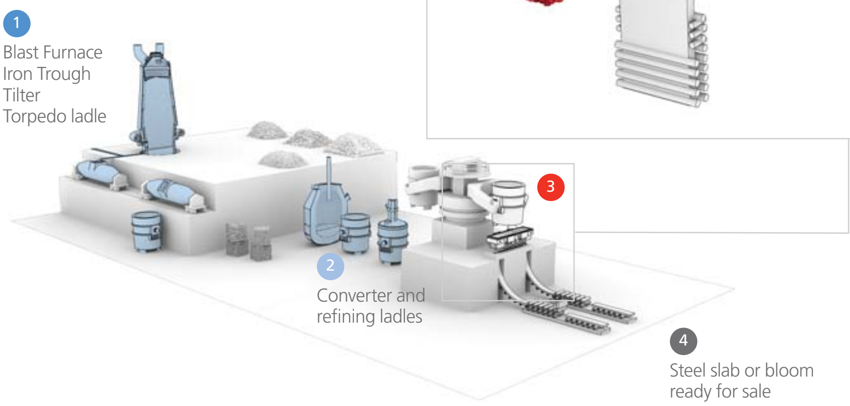
Asia-Pacific

19 Production sites	2 R&D centres
3,232 Employees	35 Sales offices



Vesuvius at a Glance *continued*





Steel Division

Revenue

£942.0m

The continuous casting of steel is a highly demanding process that is critically dependent upon consistent product quality and optimised production. Vesuvius provides systems, products and services that allow steel mills to contain the molten metal they produce, protect it from oxidation and chemical contamination, and regulate its flow. Vesuvius enables its customers to increase efficiency and productivity, enhance quality, and improve the safety and reduce the environmental footprint of the casting process.

Steel Flow Control

supplies the stoppers and tubes used to channel and control the flow of molten steel from ladle to tundish and from tundish to mould; slide gate refractories for ladles and tundishes; slide gate systems; tundish and mould fluxes; and control devices to monitor and regulate steel flow into the mould. These products have been designed to resist extreme thermomechanical stress and corrosive environments. The majority of these products are consumed during the process of making steel and, consequently, demand is primarily linked to steel production volumes. Continuing innovation allows us to offer enriched solutions that create additional value in our customers' processes.

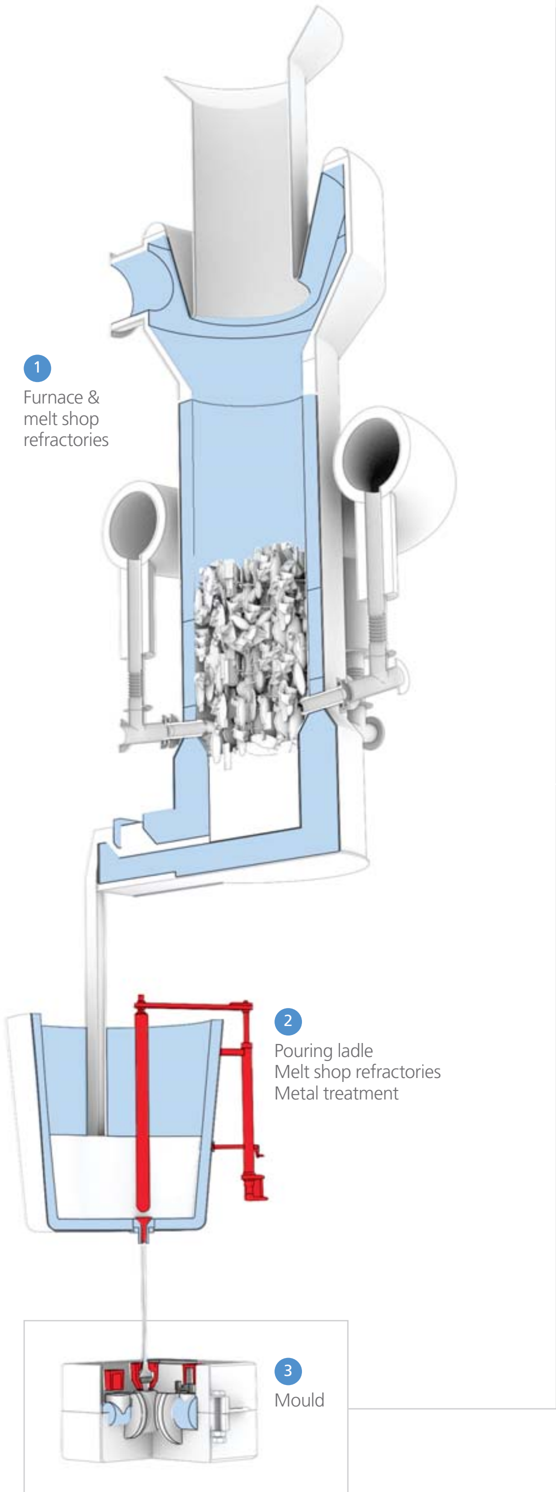
Advanced Refractories

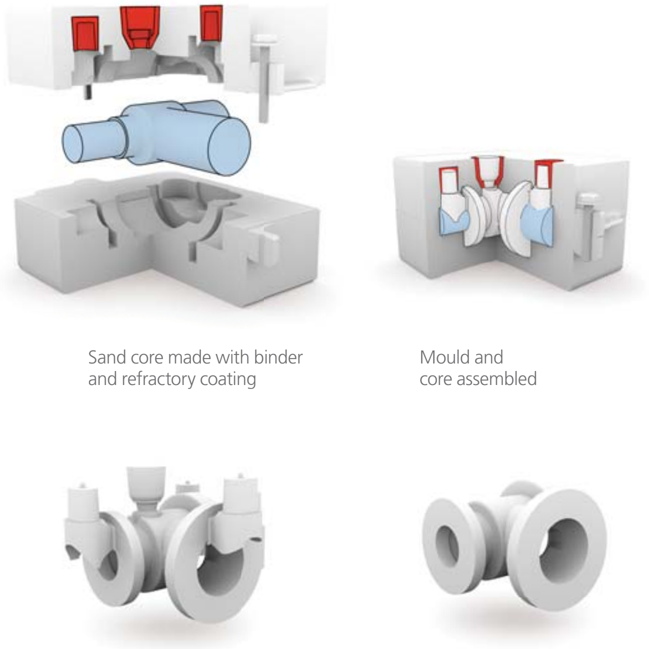
produces specialised refractory materials for lining steelmaking vessels such as blast furnaces, ladles and tundishes, which are subject to extreme temperatures, corrosion and abrasion. These materials are in the form of powder mixes, which are spray-applied or cast onto the vessel to be lined ('monolithics') and refractory shapes (e.g. bricks, pads and dams). Vesuvius is one of the world's largest manufacturers of monolithic refractory linings. Advanced Refractories delivers installation technologies, products adapted to fit customers' specific processes and plants, and effective and efficient logistics services. These factors are combined with significant R&D, a deep knowledge of customers' processes and project management capability to deliver market-leading solutions for our customers.

Technical Services

focuses on the capture and interpretation of key manufacturing data, complementing Vesuvius' strong presence and expertise in molten metal engineering to create new technologies and integrate them into expert process management systems. Applications include: data acquisition using sensors and laser scanners; slag prevention technology; and caster data acquisition in the tundish and mould, which uses sensors to obtain temperature measurement, metallurgical data and other mould information.

See **Steel division operating review** on p36-43





Foundry Division

Revenue

£459.4m

Vesuvius' Foundry division, trading as Foseco, is a world leader in the supply of consumable products, solutions and associated services related to the foundry industry. The foundry process is highly sequential and is critically dependent on consistency of product quality and productivity optimisation. The Foundry division's products, solutions and use of advanced computer simulation techniques allow foundries to reduce defects and hence reduce labour-intensive fettling and machining, minimise metal usage requirements, influence the metal solidification process and automate moulding and casting, thus reducing cost, energy usage and mould size.

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.

See **Foundry division operating review** on p44-47

Business Model

A profitable, flexible, cash generative model focused on growth

We develop and manufacture high-technology products and solutions for supply to the steel and casting industries, operating a profitable, flexible, cash generative and growth-building business model. Over many years we have built the brand equity of our Vesuvius and Foseco products through reliability, technology and service.

The foundation of our business model is the supply of consumable products from a global presence. Our industry experts are embedded at many customer locations and are therefore ideally placed to collaborate with customers to identify their needs, and potential service and process improvements. This also enables us to grow our solutions and service portfolio.

Our model is resilient to end-market volatility due to the flexibility of our diversified manufacturing footprint and adjustable variable cost base. Our model is profitable by allowing value pricing for bespoke products and services. It generates growth as we can enlarge our market with additional innovative products and solutions.

Key resources

Financial capital We use the cash generated by our business to invest in innovation, people, operating assets, technology and sales to generate further growth

Manufacturing capital We have a global footprint, with 66 production sites based on six continents, giving us close proximity to our customers

Intellectual capital We have 17 R&D centres and over 300 R&D staff worldwide, generating innovative products and solutions for our customers

Human capital We invest in our skilled and motivated workforce of approx. 11,000 people and train them to keep safe and maximise their potential

Social capital We champion our Values and our ethical conduct. We maintain strong relationships with customers and our wider stakeholder group

Natural capital We utilise high-quality raw materials, secured through reliable and well-developed supply chains

Global Presence

Using our global spread of expertise to identify and create market opportunities

Vesuvius is present on six continents, supporting the development of global steel and foundry manufacturing processes with new technologies. We have manufacturing capability in all the main steel and foundry markets and hire and train local engineers. These are progressively integrated within the Vesuvius network of experts, and offered international careers. Our local manufacturing, local expertise and global knowledge of our customers' processes give us a special relationship with our customers, helping them to optimise their process and product performance. All over the world, new plants use Vesuvius and Foseco products to create the best possible conditions for success.

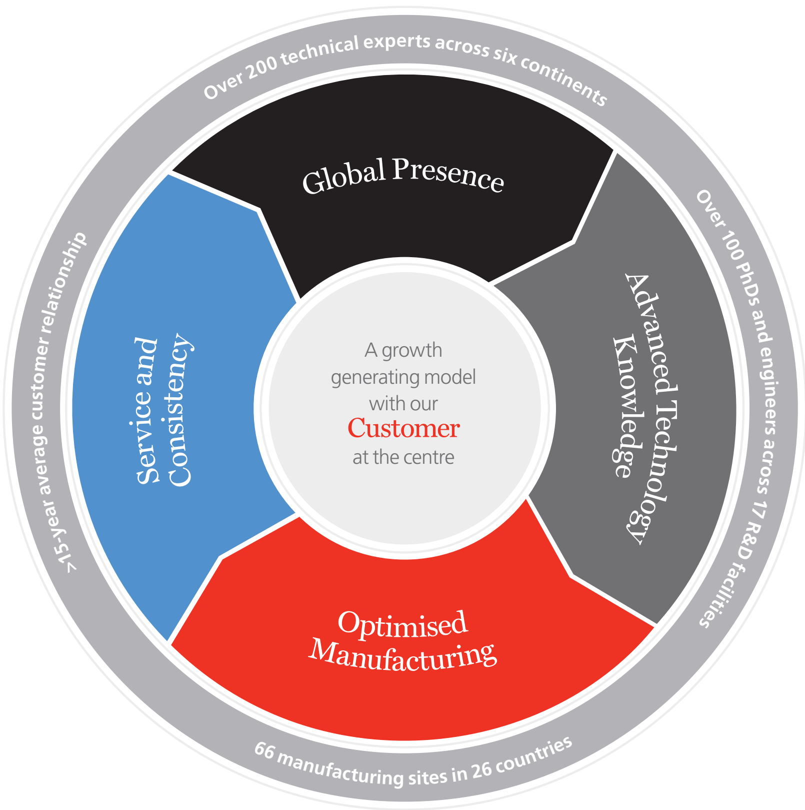
See more about **our global presence** on p6-7

Advanced Technology Knowledge

Our technology centres develop value-adding solutions involving engineered systems and high value consumables

Our continuing investment in the Company's R&D centres is reflected in all areas of our offering. We have knowledge of the most advanced ceramic and metallurgical techniques using state-of-the-art equipment and the most advanced technologies of flow simulation and finite element analysis. We are therefore able to provide our customers with sophisticated, innovative, custom-designed solutions, with the highest level of confidence in their suitability, creating value and helping them differentiate from their competition. We enhance this expertise with our growing capabilities in data capture and interpretation to deliver expert process management improvements to our customers.

Read more about **Innovation** on p48-49



Key outputs

Value to shareholders Our efficient use of capital generates annual profits, giving returns to our shareholders and underpinning sustainable growth

High-quality products We deliver bespoke, high-quality refractory and consumable products and systems to industry-leading customers around the world

Customer value Our investment in innovation creates cutting-edge products and solutions, delivering enhanced value for our customers and differentiating us from our competitors

Expert delivery We embed technical experts with our customers, giving us a fundamental understanding of their needs and delivering them access to our global network of highly skilled individuals

Sustainable business Our commitment to ethical business delivers strong, long-term, sustainable commercial relationships

Environmental benefits We develop products that deliver efficiency and energy savings to our customers. We focus on sustainability in our own business through the efficient use of energy and natural resources

Optimised Manufacturing

Low-cost Lean manufacturing, close to customers, provides reliable, 'just-in-time' products

Our successfully tested products can be manufactured at a short distance from our customers' plants, guaranteeing cost competitive and time efficient delivery. We optimise our cost competitiveness by investing in the lowest cost production site in the area and have established manufacturing facilities in emerging markets from the beginning of their industrialisation. This, together with the high volume of pieces we are able to produce, provides our customers with the best balance between value, cost and service for our high-technology solutions.

See more about **customer proximity** on p6-7

Service and Consistency

Serving our customers reliably, competitively and consistently with consumables critical for their manufacturing processes

Alongside developing our global presence, we ensure a local service to our customers, from inventory management to high-quality technical support at their sites and the ability to swiftly modify production and supply to reflect changes in customer requirements. Our knowledge of end-market processes, specifications and techniques around the world gives our experts an unparalleled ability to support our customers. This unique level of service relies on our technicians' permanent presence at our customers' sites, and their ability to leverage the worldwide expertise accumulated across the Vesuvius network.

Read more about **Quality and Reliability** on p17

Chief Executive's Strategic Review

Revenue
£1,401m

Trading profit
£133m

Introduction

In 2016, Vesuvius continued to progress in line with its objectives and strategy despite subdued conditions persisting in our key end-markets of steel and foundry. The second half of the year showed some signs of market stabilisation, albeit at reduced levels. Our resilient performance reflects the strength of the customer relationships that we have created over the years, our progress in implementing self-help initiatives and ongoing restructuring programmes, the quality of our product and service offerings and, critically, our ability to directly enable our customers to improve their own efficiency, thereby adding measurable value to their businesses.

The year began at the bottom of an economic downturn which had started at the beginning of 2015 with the steel and foundry markets continuing to be affected by Chinese exports and by a substantial reduction in activity in the US and UK. The situation improved slightly during the year with tariff measures imposed in the US and, more recently, in Europe with worldwide markets signalling a progressively more protectionist approach. Brazilian economic contraction and political instability dominated the already difficult market in South America. We saw reduced foundry investment worldwide and reduced demand for foundry castings for the agriculture, construction and mining industries.

Despite this backdrop, we have continued to consolidate our positions in China, India and South America, our three strategic areas of development. The transformation of the Chinese economy from an investment-driven growth economy to one that is consumer-driven is under way. This transformation induces a shift in steel demand, from the less sophisticated long products used for construction towards the high-quality flat products used in consumer goods and the car industry. This flat steel segment is the largest customer for our high-technology products and solutions. India, where we enjoy high sales and penetration rates, was the fastest growing steel market in 2016, confirming the transition into urbanisation and industrialisation, which is expected to have a substantial effect on steel production.

Foreign exchange movements had a significant impact on our customers' competitive positions in some regions, mostly related to their manufacturing costs and their exposure to cheap imports. Whilst Brexit did not affect our business materially, broader based market concerns drove a weaker sterling, which had a significant translation impact on our results. These movements, accentuated by the US presidential election, have created a new element of uncertainty in the evolution of our markets. As a consequence, global economic activity was slightly below last year but our efforts to reduce our cost base have led to a significant increase in our margins versus the second half of 2015.

In 2015 we initiated restructuring plans throughout the Group to adapt our business and our cost base to the changing trading environment. Since then we have reduced our overall manufacturing footprint and overhead structure in the mature markets where we believe the production decline to be structural and permanent. We closed three Flow Control plants in Europe in 2016. Over the course of 2016 we incurred restructuring costs of £28.5m and recorded £16.6m of savings. The earlier than anticipated progress has allowed us to increase the full benefits of the programme to £35m by the end of 2017.

In line with our strategy, we continue to focus on R&D and to invest in solutions that will enable further automation of our customers' production processes. Over recent times our Technical Services solutions have been significantly enhanced by the acquisitions of AVEMIS, ECIL Met Tec, Process Metrix and Sidermes. In addition, in 2016 we strengthened our core activities with the bolt-on acquisition of the mould and tundish flux business of Carboox.

Our overall management focus is on continuing to build and implement an Excellence plan in the management of our operations to reach the status of a best-in-class company. This has involved the entire population of our employees focusing on six key areas: customers, innovation, strategy, business support, supply chain agility and talent management.

With the ongoing development of innovative solutions that create value for our customers, supported by the effective execution of our self-help initiatives and restructuring programmes, we are confident that we can continue to deliver increasing value to our shareholders.

Performance Overview

Foreign exchange rates had a considerable translational impact on our results, with Vesuvius achieving global sales in 2016 of £1,401m, an increase of 6% (2015: £1,322m) on a reported basis despite the ongoing decline in mature global steel and foundry markets and currency fluctuations. At constant currency and adjusted for the effects of acquisitions and disposals, underlying revenue was down 4% compared with 2015. Reported trading profit in 2016 was £133.3m, an increase of 7.5% (2015: £124.0m), but a decrease of 1.5% over the previous year on an underlying basis. However, thanks to the first effects of our restructuring measures, our margin increased from 9.4% to 9.5%.

Our full year performance was hampered by the conditions in the core Vesuvius markets of Europe and NAFTA in the first half of the year, where the effects of the 2015 decline continued to be felt in the supply chain for steel customers. This situation began to alleviate in the second half, supported by our continued focus on our customer base in developing markets.

Our Markets

According to the World Steel Association, global steel production in 2016 increased by approximately 0.7% compared with the previous year. Whilst steel markets remained broadly flat, the market improvement was driven mainly by an increase in steel production of 1.2% in China, and 7.4% in India, which was the fastest growing market in 2016 as it has been for several years. India is now the third largest producer in the world and is catching up with Japan (whose volumes saw a 0.3% decline in 2016). NAFTA steel volumes improved marginally (+0.7%) after a disappointing year in 2015.

The foundry market continued to be affected by lower demand within the agriculture, construction, power and mining industries, which resulted from the general decline in commodity and precious metal prices, with reduced investment and activity worldwide. However, both global light vehicle (i.e. passenger cars and light trucks) industry production and heavy truck worldwide output were up 3.9% and 2.5% respectively year-on-year, primarily from increases in China and India.

More generally, the engineering sector was sluggish with industrial investment remaining at a low level as a result of the general under-utilisation of production capacity and the slowdown of Chinese industrial growth. Additionally, some markets where we traditionally experienced good volumes and margins have faced challenges from political and economic instability.

Our Strategy

The strategy we developed when we launched Vesuvius on the market is articulated around five pillars designed to ensure long-term revenue growth, improved profitability and sustained cash generation.

Strategic pillars
Since 2013, your Board has pursued a consistent strategy for profitable growth, focused on five strategic priorities

Reinforce our technology leadership

Increase penetration of value-creating solutions

Capture growth in developing markets

Improve cost leadership and margins

Build a Technical Services business

Chief Executive's Strategic Review
continued

Reinforce our technology leadership
Vesuvius was built and grew on technology breakthroughs that enabled the steel continuous casting and foundry industries to improve their efficiency substantially. This technology leadership drives our unique value proposition and underpins our ability to deliver value enhancement to our customers. We invest nearly twice as much in R&D, as a percentage of revenue, as our main competitors.

Increase penetration of value-creating solutions
Our technology has been widely adopted by the most sophisticated producers in the most developed markets. However, there are still marked differences in the penetration of our solutions within the industry and consequently there is a wider audience of customers whom we believe can benefit from them.

Foundry and Steel businesses are experiencing an increased level of competition throughout the world from both producers and alternative materials. As steel and foundry businesses grow in new areas, they will require higher levels of quality and performance as well as lower costs. We will dedicate our technical marketing efforts to help these customers develop.

Capture growth in developing markets
Building on our long-lasting presence in all markets, we can leverage the high growth enjoyed by our customers' industries in emerging markets which are large consumers of steel goods and foundry castings as well as benefiting from their competitiveness on the global stage, driving export demand.

Improve cost leadership and margins
Our supply chain efficiency drives our ability to deliver products and services to our customers at the right price whilst maintaining our margins. We apply the principles of Lean manufacturing across all our sites to improve our quality and productivity continuously. In addition, our global presence and leadership allow us to benefit from economies of scale and deliver excellent service from local sites.

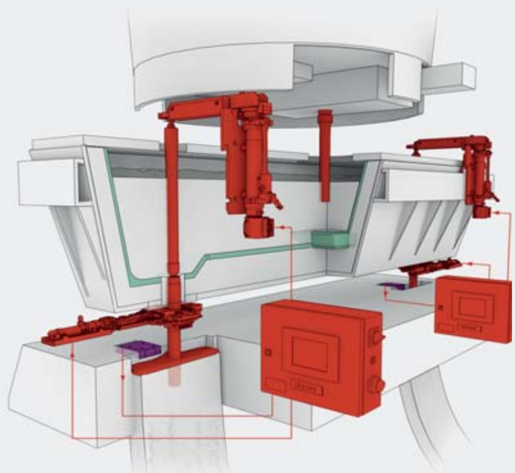
Build a Technical Services business
Our customers' processes require increasing levels of engineering services to reach the demanding levels of safety, accuracy and consistency required by their end-customers' quality specifications. We created Technical Services as a new business line for the Group to address this growing market demand. It will complement existing product lines with new services to our customers providing

Serving customers: Flow Control

Full conversion of 2 slab casters with new Mould Level Control, Tube Changer and associated Refractories.

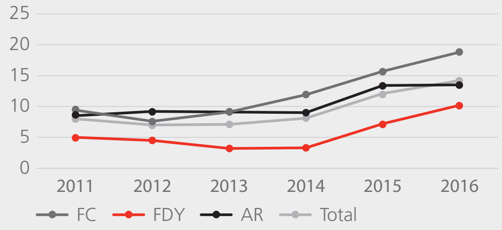
"By focusing on the customer's needs, Vesuvius delivered an integrated solution to improve quality and productivity."

Emanuele Boccalatte Commercial Director, Flow Control, South Europe



Right: Electric Stopper Rigging, Mould Sensor, Advanced Controller, Tube Changer and refractories

New Product Sales as % of Total Sales



continuous data capture and interpretation of key process parameters. We will then leverage Vesuvius' strong presence and expertise in metal casting to create new technologies and integrate them into expert process management systems.

Our Businesses

Steel Flow Control

Reported revenue in Steel Flow Control was up 3.9% compared to 2015, although revenues were down 5.3% on an underlying basis. Revenue decline in NAFTA and EMEA was due primarily to the closure of steel plants in the region. It is our expectation that steel production will not recover to the previous levels in these mature economies where the nature of economic growth requires less steel than in the past. However, for Vesuvius this was partially offset by increased revenue and sales penetration in India.

Advanced Refractories

Reported revenue in Advanced Refractories was up 5.3% but decreased by 3.3% on an underlying basis compared with 2015, due to the poorer global market conditions experienced in the second half of 2015 continuing into 2016. Underlying trading profit benefited from self-help actions in our mature markets and increased sales in the expanding markets of India, North Asia and South Asia.

Technical Services

As a new business line for the Group, the key challenge for Technical Services is seeking to establish a presence independent from our other businesses, and to integrate new acquisitions. Operationally its focus is to develop complementary solutions for our customers, reflecting their demand for further automation and monitoring of their production processes. In 2016, Technical Services generated revenues of £36.9m. Through the Technical Services business the Group continues to invest in solutions that will enable customers to have further control of their production processes in line with this strategy.

Foundry division

Reported revenue in Foundry increased by 8.3% but decreased by 2.5% on an underlying basis as a result of the more difficult end market conditions, particularly in agriculture, construction and mining. However, underlying trading profit improved by 7.3% and underlying return on sales increased by 110 basis points as a result of the effects of an earlier commencement of restructuring measures implemented in 2015.

The Challenge

Our customer, part of a leading worldwide steel production group making flat products, has been using tundish slide-gates since the start-up of its two continuous casting machines. In 2014, in order to increase the production of slabs that were 'right first time', it made the decision to convert these casters to a modern automatic mould level control solution, including conversion from tundish slide-gates to a stopper flow control mechanism, converting the tundishes to support automatic mould tube changing.

Our Solution

Vesuvius supplied and commissioned a fully integrated mould level control solution, which included eddy-current mould level sensors, our advanced auto-adaptive controller, and an electric stopper valve with tube changing mechanism. This equipment was supplied with associated refractories, based on a multi-year refractory contract.

The Benefits

This project brought improved performance to the user, resulting in an increase in the percentage of slabs classified within the required specifications, together with higher productivity.

For Vesuvius, it created a new refractory sales opportunity through a 'global customer needs' approach.

Chief Executive's Strategic Review
continued

Innovation as Our Foundation
Vesuvius has a proud heritage of bringing innovation to the markets it serves.
Our developments in VISO* isostatic pressing technology and in slide-gate systems were key enablers of the continuous casting process now deployed throughout the whole of the steel industry. Our innovations in molten metal filtration and casting feeding systems have been used extensively to improve the quality of cast products in the foundry market. Maintaining that technology leadership is a central objective of our strategy, and the spirit of innovation is at the core of all our activities.

Turning innovation into results
Innovation is all about translating an idea into a commercial reality. In 2016, we maintained our level of R&D expenditure at £28.6m, representing approx. 2% of sales. We currently have 159 patent families, and 1,695 patents granted worldwide, with 579 patent applications pending. In 2016, we estimate that 14% of our revenues came from products launched within the past five years, a progression of 6% over three years. Our goal is to reach 20% over the next three years. With the new stage-gating process launched last year, we have seen an acceleration in our new product launches and in the market development of our new solutions.

Delivering solutions
Vesuvius solutions and products can greatly influence the quality of our customers' products and the efficiency of their processes. All our new products and solutions are developed with value creation for our customers in mind and the innovation process begins with a clear understanding of their needs. We have more than 200 technical experts supported by local development teams on all continents to ensure we meet our customers' needs. These local development laboratories play a lead role in customising products for customers, and qualifying new sources of key raw materials.

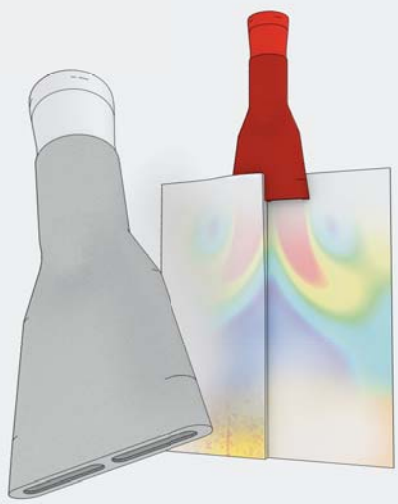
Six of our local development laboratories are equipped with facilities for physical and computational fluid dynamics studies. They allow us to develop solutions that regulate the flow of metal and guarantee the most adapted laminar pattern to avoid metal pollution and turbulence affecting the solidification process. We also place experienced scientists and engineers at our local development laboratories to enable us to analyse the complex interactions between refractory materials and molten metal arising in our

Serving customers: Advanced Refractories

Endless strip production: a refractory design breakthrough and partnership with customers.

"Local manufacturing of our global high technology solutions enables Vesuvius to respond to customer needs."

Roy Phillips Marketing & Technology Director, Steel, China/North Asia



Right: Arvedi/Vesuvius ESP Shroud

customers' operations. These modelling facilities and local development laboratories work hand-in-hand with our five global research centres to stay constantly updated with information on the latest technological developments. We regularly conduct customer seminars and training sessions to ensure that the full range of Vesuvius products and solutions are known, properly used and informed by our customers' experience.

Next generation product development

Our five global research centres focus on the development of the next generation of products and technologies in partnership with strategic customers and leading universities. These laboratories are staffed with scientists and engineers possessing advanced degrees in various disciplines and are equipped with highly specialised equipment.

We have made significant progress on the construction of our new global centre of excellence for Advanced Refractories in Visakhapatnam (Vizag), India, which will be commissioned in 2017, and continue to make progress with our plans to develop our centre of excellence for steelmaking and foundry refractories in Pittsburgh (US).

Quality and reliability

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 to people and equipment attached to a catastrophic failure is such that no compromise can be accepted. Reliability therefore is a primary commitment of Vesuvius.

We strive to deliver this reliability and consistency through best-in-class quality management at all of our 66 production sites and 91 major customer locations.

Lean and Industrial Excellence

Cost leadership and margin improvement are two of our strategic priorities, and in a business where we need to manage the challenges presented by the volatility in our end-markets, a focus on process efficiency and quality is fundamental.

Our Lean programme started in 2008 with the belief that:

> Standardisation of tasks and processes is the cornerstone of safety, quality, productivity and continuous improvement

> Employee motivation and customer satisfaction are critical foundations for the long-term success of the Group

The Challenge

Endless Strip Production (ESP) technology is a major innovation in the production of flat steel, developed by Arvedi. It enables the production of super thin hot strips in a continuous and uninterrupted process using significantly less energy than conventional methods. During ESP, the liquid steel mould flow is critical and a very specific refractory shroud has to be used.

Rizhao was the first steel plant in China to install this technology, and a subsequent challenge was to source a local supplier for this refractory part.

Our Solution

In partnership with Arvedi, Vesuvius initially used its extensive flow modelling capability and its refractory production skills to develop a specific shroud for the first ESP facility built in Italy, able to meet the necessary quality and sequence duration requirements.

When subsequently Rizhao started using ESP technology in China, Vesuvius imported the refractory that it had successfully been using in the original Italian facility. Then, once the new technology was operating as desired, Vesuvius established local manufacturing capability.

The Benefits

For Rizhao, local refractory production improved the delivery time and local support capability. Local manufacturing presence enables Vesuvius to fine tune the refractory specifications and performance to meet changing customer needs.

With three ESP facilities successfully commissioned in China and two more planned, Vesuvius has become a key refractory supplier for this breakthrough steel production technology.

Chief Executive's Strategic Review *continued*

> Improving information flow is instrumental in guaranteeing fast and effective cross-functional processes

In 2016, we continued to apply the Lean principles as we deployed our Excellence Roadmap to deliver a highly competitive manufacturing footprint. The action plans driven by our Excellence programme have provided considerable results in terms of cost reductions, Lean savings, safety, quality, productivity and lead time reduction. These action plans and further initiatives are ongoing in 2017.

Portfolio Management and Capital Allocation

Our investment in 2016 amounted to £43.2m, £8.0m of which was for the acquisition of the mould and tundish fluxes business of Carboox in Brazil – broadening the Steel Flow Control offering in an important line for the Group. The remaining £35.2m was invested in plant and equipment, an 18% reduction on 2015.

Trade working capital increased on a constant currency basis by £12.9m largely as a result of safety stock being built in preparation for the changes to the manufacturing footprint as well as pressure on payment terms in China and India. However, cash conversion remained high at 94%. Overall, our net debt increased by £28.7m, with cash acquisition costs of £7.7m, the cost of restructuring activities £16.8m, and a £30.3m foreign exchange translational impact masking a robust £125.0m of underlying operating cash flow generation.

Health and Safety

In 2016 our lost time injury frequency rate (LTIFR) remained broadly stable at 1.6. Senior management continues to lead by the performance of executive safety tours and an increased focus has been brought to our work at customer locations.

In 2016, 76% of all our working population was involved in safety audits to increase safety awareness and behaviours. More specifically, we have developed new initiatives to improve road safety and machinery safety, two areas in which we have suffered too many severe incidents.

Sustainability

During 2016, we continued our efforts to reduce plant energy consumption and environmental impact. Some impressive improvements have been achieved in China where environmental protection has become a key topic. We also continue to develop and promote solutions that allow our customers to reduce their waste, energy consumption and CO_2 emissions. Total energy costs are less than 3% of revenue.

Management Focus

We further strengthened our senior management team in the year, with a new appointment and an internal promotion. Patrick André assumed the role of President, Flow Control, following Chris Abbot's departure. Patrick was previously CEO of both the Nickel and Manganese divisions of Eramet Group. Alexander Laugier-Werth, previously Vice President, Operations Foundry, was appointed President, Technical Services, following Luis Reyes's move within the Company. In their new roles, Patrick and Alexander joined our Group Executive Committee.

Outlook

Whilst the global market environment is broadly stable at relatively low levels, in recent months we have seen some encouraging early signs of improvement. Vesuvius remains well placed to benefit from a recovery in end markets, and we will continue our initiatives to create shareholder value.

We remain confident in our ability to improve trading margins and working capital performance, reduce net debt, and capitalise where there is further growth in our addressable markets in the near and medium-term. We will continue to assess acquisition opportunities where we believe material shareholder value can be created.

François Wanecq, Chief Executive
2 March 2017

Risk

The Board continually monitors the risks, both internal and external, which could significantly impact the long-term performance of the Group.

Risk Management in 2016

The Board is responsible for setting the Group's risk appetite and ensuring that appropriate risk management systems are in place. The Group undertakes a continuous process of risk identification and review, which includes both top down and bottom up processes, allowing operational, functional, senior executive and Board members' views on risk to be independently gathered. This year the Board undertook a clean sheet review of the Group's principal risks, to ensure that the Group was clearly communicating those specific key risks that could have the greatest impact on our business. As a result of this process the Group's table of principal risks has been redrawn, with risks recategorised and restructured.

Changes to Risk in 2016

The Board does not believe that there has been any material change to the Group's risk profile during the year, but believes that the restructured overview of the Group's principal risks overleaf will give greater insight and clarity about the risks that are considered most significant for the Group.

Risk mitigation

Once risks are identified by the Group, they are actively managed in order to mitigate exposure and, where cost effective, the risk is transferred to insurers. The senior management 'owners' for each principal risk update the mitigations of that specific risk and contribute to the analysis of likelihood and materiality. This is reported to the Board. We have also built a business structure that gives protection against the 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.

Board Monitoring

The Board defines the Group's risk appetite, considering the nature and extent of the principal risks that the Group should take. During 2016, the Board discussed the classification of the Group's risks, considering the range and limits of the risks the Group should adopt. The Board's oversight of principal risks also involved a Board review of the processes by which the Group manages those risks, establishing a clear understanding at Board level of the individuals and groups in the business formally responsible for the management of specific risks.

See more in **Governance** on p62-103

Principal Risks

The risks identified on pages 20 and 21 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 set out on pages 20 and 21 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.

Viability Statement

In accordance with the UK Corporate Governance Code, the Directors have assessed the viability of the Group over a three-year period to 31 December 2019, taking into account the Group's current position and the potential impact of the principal risks and uncertainties.

The Directors have determined that a three year period is an appropriate period over which to provide the viability statement because this is the

Viability process

Identify	Assess	Model	Report
Viability time horizon and risk analysis framework	Principal risks and stress scenarios	Viability against risk scenarios, examining probabilities and impacts	See **Viability** above

Risk
continued

period that the strategic business plan focuses on and is sufficiently funded by financing facilities with average maturity terms of 3.8 years.

In making this statement, the Directors have carried out a robust assessment of the principal risks that may threaten the business model, future performance, solvency and liquidity of the Group. This is embodied in the annual review of a three year bottom-up business plan process which includes a review of sensitivity to 'business as usual' risks, such as profit growth and working capital variances, severe but plausible events and the impact on the central debt and headroom profile analysis. The results take account of the availability and likely effectiveness of the mitigating actions that could be taken to avoid or reduce the impact or occurrence of the underlying risks.

Whilst the review has considered all the principal risks identified by the Group, the following were selected for enhanced stress testing: an unplanned drop in customer demand, debt recovery risk due to customer default, reduction in earnings from increased interest charges and impact of volatility in foreign currency earnings. The Group's prudent balance sheet management, flexible cost base to react quickly to end market conditions, access to long-term capital at acceptable financing costs and well diversified international businesses in different currency earning profiles are the mitigating factors to manage these principal risks.

In performing the stress testing certain assumptions were made including that: customer failures result in write offs of the full value of the receivables with no lost revenue replacement; and, partial cash flow mitigation is possible from working capital releases, restricted capital expenditure and operating cost reductions. Under the enhanced stress testing described above, a potential breach of a covenant would only occur in the event of an unforeseen reduction in revenue greater than 35%. Accordingly, the Directors confirm that they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the three-year period to 31 December 2019.

Principal Risks and Uncertainties

Risk and context	Potential Impact	Mitigation
Demand volatility Vesuvius' expectations of future trading are based upon an assessment of end-market conditions, which are subject to some uncertainty. Vesuvius' end-markets are historically somewhat cyclical in nature.	**Unplanned drop in demand and/or revenue due to reduced production** **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 & service offerings securing long-term revenue streams and maintaining performance differential Increase in service and product lines by the development of the Technical Services business 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 & Globalisation Pressure from local, national or regional requirements conflict with the quality and efficiency delivered by scale and standardisation.	**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 or taxation** **Loss of market share**	Highly diversified manufacturing footprint with manufacturing sites located in 26 countries Strong local management with delegated authority to run their business and manage customer relationships Cost flexibility Tax risk management and control framework together with a strong control of inter-company trading
Financial uncertainty Fluctuations in the value of currencies, interest rates, or rates of inflation may adversely impact the Group's financial position or results of operations. Availability of sufficient capital is critical to allow Vesuvius to deliver its business plan.	**Customer and other counterparty default** **Restricted access to capital hampering ability to fund growth** **Reduction in earnings from increased interest charges** **Reduced market liquidity and increased cost of capital**	Capital allocation discipline Capital structuring, including fixed rate borrowing and matching of debt to cash flow earnings currency Alignment of cost structure with revenue where possible Effective planning of the debt refinancing profile to avoid exposure to short-term market disruptions

Principal Risks and Uncertainties *continued*

Risk and context	Potential Impact	Mitigation
Complex and changing regulatory environment Vesuvius is subject to worldwide legal and regulatory regimes, some of which impose extra-jurisdictional obligations on companies and are continually updated.	**Revenue reduction from reduced end-market access** **Disruption of supply chain and route to market** **Increased internal control processes** **Increased frequency of regulatory investigations** **Reputational damage**	Globally disseminated Code of Conduct highlighting ethical approach to business Worldwide confidential Speak up procedure Compliance programmes and training across the Group Independent Internal audit function Experienced Internal legal function
Business interruption The Group is subject to operational risks including natural catastrophe, terrorist action, fire/explosion, environmental regulation, industrial actions, supply chain issues, and cyber risk.	**Loss of a major plant temporarily or permanently impairing our ability to serve our customers** **Damage to or restriction in ability to use assets** **Denial of access to critical systems of control processes** **Disruption of manufacturing processes** **Inability to source critical raw materials**	Diversified manufacturing footprint Dual sourcing strategy and development of substitutes 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
Failure to secure Innovation Not maintaining and/or developing the necessary sustainable differentiation in products, systems and services by driving innovative solutions. Competitive advantage derived from proprietary intellectual property is lost through inadequate protection.	**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 & significant investment in R&D, with market leading research A shared strategy for innovation across the Group, deployed via our R&D centres Stage gate process from innovation to commercialisation to foster innovation and increase alignment with strategy Programmes of Manufacturing and Process Excellence Quality programme, focused on quality and consistency Stringent intellectual property registration and defence
Attracting & retaining staff Failure to attract sufficient new talent to the Group based on industry perception and competition. Failure to retain and maintain a talent pipeline and internal succession options, for middle and senior management positions.	**Staff turnover in growing countries and regions** **Stagnation of ideas and development opportunities** **Loss of expertise and critical business knowledge** **Organisational culture is not maintained** **Reduced management pipeline for succession to senior positions**	Contacts with universities to identify and develop talent Internal focus on talent development and training, with tailored career-stage programmes Career path planning and global opportunities for high potential staff Internal programmes for the structured transfer of technical and other knowledge Clearly elucidated values to underpin business culture
Quality, Health & Safety Vesuvius works in highly challenging manufacturing environments, providing products, systems and services that are mission critical and for which reliability is paramount.	**Product or application failures lead to adverse financial impact or loss of reputation as technology leader** **Health & safety breach, manufacturing downtime or damage to infrastructure from incident at customer plant** **Customer claims from product quality issues** **Injury to staff and contractors**	Active safety programmes, with ongoing wide-ranging monitoring and safety training 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 department controlling third party contracting

Board of Directors

1 N


2


3


Key to Committee membership

- A Audit Committee
- N Nomination Committee
- R Remuneration Committee
- ● Committee Chairman

1. John McDonough CBE Chairman

Appointed: 31 October 2012

Career experience: John was appointed as a Director and Chairman of the Company on 31 October 2012. John was group Chief Executive Officer of Carillion plc, the support services and construction firm, for 11 years until he retired in 2011. Prior to joining Carillion he spent nine years at Johnson Controls Inc. working for the automotive systems division, initially in the UK, before moving to become Vice President of the division's European operations and ultimately moving to Singapore to develop the business in Asia-Pacific. He then returned to the UK as Vice President of the integrated facilities management division for EMEA. John served as Chairman of the Remuneration Committee of Tomkins plc from 2007 to 2010 and as a Non-executive Director of Exel plc from 2004 to 2005. John was awarded a CBE in 2011 for services to industry and is a British citizen.

Other appointments: John joined The Vitec Group plc in March 2012, and has served as its Chairman since June 2012. He is also a Chairman of Cornerstone Property Assets Ltd and Sunbird Business Services Ltd, and a Trustee of Team Rubicon UK.

2. François Wanecq Chief Executive

Appointed: 31 October 2012

Career experience: François was appointed as a Director of the Company on 31 October 2012. He previously joined the Cookson Group plc board in February 2010. François has been the Chief Executive of Cookson's Engineered Ceramics division, now Vesuvius, since October 2005. Prior to joining Cookson he held a series of senior management roles at Arjo Wiggins Group and served as an Executive Director of Arjo Wiggins Appleton plc from 1999 until it was delisted. From 1985 to 1995 he was Managing Director of the technical ceramics division of the Saint-Gobain Group. François graduated from the École Polytechnique and École des Mines de Paris and is a French citizen.

3. Guy Young Chief Financial Officer

Appointed: 1 November 2015

Career experience: Guy was appointed as Chief Financial Officer of Vesuvius plc on 1 November 2015. Prior to joining Vesuvius plc, from January 2011 to November 2015, he served as Chief Financial Officer of Tarmac and latterly Lafarge Tarmac, the British building materials company. Prior to his role at Tarmac, from 2007 Guy held a number of senior financial and business development positions at Anglo American plc, having joined that company from Scaw Metals Group, the South African steel products manufacturer, where he held the position of Chief Financial Officer from 2004 to 2007. Guy is a British and South African citizen, and he qualified with the South African Institute of Chartered Accountants.

4. Christer Gardell Non-executive Director

Appointed: 31 October 2012

Career experience: Christer was appointed as a Director of the Company on 31 October 2012, having previously joined the board of Cookson Group plc in June 2012. Christer co-founded Cevian Capital in 2002, and continues to serve as Managing Partner. On 2 March 2017, Cevian Capital held 21.11% of Vesuvius' issued share capital. From 1996 to 2001, he was the Chief Executive Officer of AB Custos, the Swedish investment company. Prior to joining AB Custos he had been a partner of Nordic Capital and McKinsey & Company. He served as a Non-executive Director of AB Lindex until December 2007 and of Tieto Corporation until March 2012. Christer is a Swedish citizen.

Other appointments: Christer is Managing Partner of Cevian Capital, and Vice Chairman of the global Finnish technology and services company Metso Corporation.

5. Hock Goh Independent Non-executive Director

Appointed: 2 April 2015

Career experience: Hock was appointed a Director on 2 April 2015. Hock has more than 30 years' experience in the oil and gas industry, having spent 25 years with Schlumberger, the leading global oilfield services provider. His roles included President of Network and Infrastructure Solutions in London, President of Asia Pacific, and Vice President and General Manager of China. From 2005 to 2012, Hock was a Partner of Baird Capital Partners Asia, the private equity arm of the US investment bank Robert W Baird & Co. Based in China, he focused on the industrial, business services and healthcare sectors. He is a graduate of Monash University, Australia, and is a Singaporean citizen.

Other appointments: Hock is Chairman of MEC Resources Ltd and Advent Energy Ltd, and is a Non-executive Director of AB SKF, Santos Ltd, Harbour Energy Ltd and Stora Enso Oyj.

6. Jane Hinkley Independent Non-executive Director

Appointed: 3 December 2012

Career experience: Jane was appointed as a Director of the Company on 3 December 2012. She became Chairman of the Remuneration Committee in June 2013. Jane spent a large part of her career working at Gotaas-Larsen Shipping Corporation, the LNG shipping specialist which was listed on both the London Stock Exchange and NASDAQ. She served as Chief Financial Officer from 1988 to 1992, and as Managing Director until 1997. In 1998 Jane was appointed Managing Director of Navion Shipping AS, a company majority owned by Statoil, the oil and gas company, a position she held until 2001. She previously held the position of Non-executive Director of Revus Energy ASA, a Norwegian exploration and production company. Jane is a Chartered Accountant and a British citizen.

Other appointments: Jane is Chairman of Teekay GP L.L.C and Non-executive Director and Chairman of the Remuneration Committee of Premier Oil plc.

7. Douglas Hurt Senior Independent Director

Appointed: 2 April 2015

Career experience: Douglas was appointed as a Director of Vesuvius plc on 2 April 2015, and assumed the roles of Senior Independent Director and Chairman of the Audit Committee at the close of the 2015 Annual General Meeting. Douglas has significant financial experience, having served as Finance Director of IMI plc, the global engineering group, from 2006 to 2015. Prior to this he held a number of senior finance and general management positions at GlaxoSmithKline plc, which he joined in 1983, previously having worked at Price Waterhouse. His career has included several years working in the US and significant experience in European businesses including periods as a Chief Financial Officer and as an Operational Managing Director. Douglas is a Chartered Accountant and a British citizen.

Other appointments: Douglas is a Senior Independent Director and Chairman of the Audit Committee of Tate & Lyle plc, and a Non-executive Director of the British Standards Institution.

Group Executive Committee

1. Glenn Cowie President, Foundry
Appointed: November 2014
Years with Group: 35
Based: in Cleveland, US and is a South African and British citizen

2. Tanmay Ganguly President, Advanced Refractories
Appointed: November 2014
Years with Group: 9
Based: in Barlborough, UK and is an Indian citizen

3. Henry Knowles General Counsel & Company Secretary
Appointed: September 2013
Years with Group: 3
Based: in London, UK and is a British citizen

4. Guy Young Chief Financial Officer
Appointed: November 2015
Years with Group: 1
Based: in London, UK and is a South African and British citizen

5. Patrick Bikard President, Operations
Appointed: January 2014
Years with Group: 8
Based: in Ghlin, Belgium and is a French citizen

6. François Wanecq Chief Executive
Appointed: October 2012
Years with Group: 11
Based: in London, UK and is a French citizen

7. Patrick André President, Flow Control
Appointed: February 2016
Years with Group: 1
Based: in Ghlin, Belgium and is a French citizen

8. Alexander Laugier-Werth President, Technical Services
Appointed: July 2016
Years with Group: 8
Based: in Ghlin, Belgium and is a French and US citizen

9. Alan Charnock Vice President and Chief Technology Officer
Appointed: April 2015
Years with Group: 32
Based: in Ghlin, Belgium and is a British citizen

10. Roel van der Sluis President, Vesuvius North Asia
Appointed: April 2012
Years with Group: 26
Based: in Suzhou, China and is a Dutch citizen

11. Ryan van der Aa Vice President, Human Resources
Appointed: May 2013
Years with Group: 17
Based: in London, UK and is a Dutch citizen

Section Two

Our Performance

In this section

Financial Review

Revenue

£1,401m

Reported	Underlying
+6.0%	-4.0%

Trading profit

£133.3m

Reported	Underlying
+7.5%	-1.5%

Headline EPS

30.4p

Reported
+8.4%

Return on sales

9.5%

Reported	Underlying
+10bps	+30bps

Basis of Preparation

All references in this financial review are to Headline performance unless stated otherwise. See Note 4 to the Consolidated Financial Statements on page 118.

Introduction

Our aim in Finance is to enable the business to improve shareholder returns and sustain growth, whilst optimising operating costs and maintaining an appropriate level of control and compliance. To achieve this, Finance must assist the Group by preserving our access to capital, must operate as a challenging business partner helping it to drive performance, create aligned back office strategies and implement a fit for purpose finance structure. The focus of the Finance Function this year has been, and will continue to be, on our people, processes and systems which will be progressively addressed through people development, efficiency programmes and targeted investment.

2016 Performance Overview

As anticipated, end markets remained weak in 2016, with the first half of the year characterised by a very slow start which progressively improved through to June. On a constant currency basis, sales and margins were well below the first half of 2015 when markets were still relatively buoyant. However, margins held up well in comparison to the second half of 2015, due in large part to the early benefits of our restructuring programme. By the time of the half year results we had started to see signs that end markets were stabilising and this was indeed what we experienced in the second half. In comparison to the prior year, the second half was flat in terms of sales but trading profit and return on sales were well ahead. This underlines the benefits of our focus on cost reduction with margins restored to levels of early 2015, despite lower sales levels. Our cost flexibility has served us well over the last year and provides us with a strong base from which to capitalise on the benefits of a turn in the markets in due course.

Dividend

The Board has recommended a final dividend of 11.40 pence per share to be paid on 19 May 2017 to shareholders on the register at 7 April 2017. When added to the 2016 interim dividend of 5.15 pence per share paid on 23 September 2016, this represents a full year dividend of 16.55 pence per share.

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

£m	2016 H1	% v H1 2015	2016 H2	% v H2 2015	2016
Sales*	**706**	-6.8%	**695**	+0.0%	**1,401**
Trading profit*	**63.0**	-16.5%	**70.3**	+13.9%	**133.3**
Return on Sales %*	**8.9%**	-100bps	**10.1%**	+120bps	**9.5%**

* at constant currency

Key Performance Indicators

In 2013, the following key performance indicators were set and have been reported against consistently since. Details of the indicators are provided on pages 34 and 35. 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 corporate activity.

This is done by:

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

Therefore, for 2016 we have:

> Retranslated 2015 results at the FX rates used in calculating the 2016 results
> Removed the results of Sidermes, which was acquired in 2015
> Removed the results of the mould and tundish flux business of Carboox in Brazil which was acquired in 2016

Objective: Deliver growth over the long term

KPI: Research & Development 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 2016 we spent £28.6m (2015: £25.8m) on R&D activities, which represents 2.0% of our revenue (2015: 2.0%).

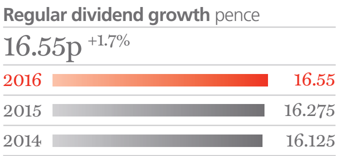
KPI: Underlying revenue growth

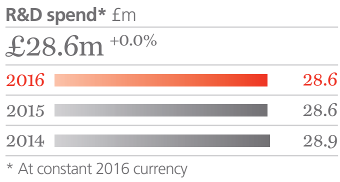
Reported revenue for 2015 was £1,322m, which after FX translation effects and removing the impact of acquired businesses, equates to £1,447m on an underlying basis. The reported revenue in 2016 of £1,401m, when adjusted for acquisitions made, is £1,388m on an underlying basis, which is a reduction of 4.0% year-on-year. The reduction reflects a 4.8% decline in underlying revenue in the Steel division and a more moderate 2.5% decline in the Foundry division.

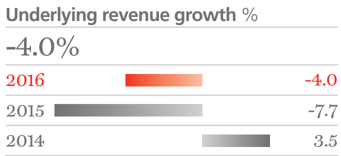
Underlying growth varied by region with India, again, reporting double digit growth of 14% in 2016. NAFTA was the region with the largest decline (9.8%) with weaker sales in both Steel and Foundry as local markets continued to suffer from low demand and the impact of plant closures in comparison to 2015. Europe declined by 4% for similar macroeconomic reasons as NAFTA. Although China sales were flat on an underlying basis, this was due to sales growth being curtailed by an ongoing cautious approach to customer payment terms.

	2016 Revenue			2015 Revenue				% change	
	As reported	**Acquisitions/ Disposals**	**Underlying**	As reported	Currency	Acquisitions/ Disposals	Underlying	Reported	Underlying
Steel	**942.0**	**(13.2)**	**928.8**	897.6	84.3	(6.2)	975.7	4.9%	(4.8)%
Foundry	**459.4**	**–**	**459.4**	424.4	46.6	–	471.0	8.3%	(2.5)%
Total Group	**1,401.4**	**(13.2)**	**1,388.2**	1,322.0	130.9	(6.2)	1,446.7	6.0%	(4.0)%

Financial Review
continued







Objective: Deliver attractive profitability

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 £133.3m decreased by 1.5% on an underlying basis versus last year whilst RoS on a constant currency basis was 9.5% a 10 bps improvement over 2015, which is a testament to the restructuring and the Group-wide set of efficiency and Excellence programmes.

The Steel Division recorded a RoS of 8.4% this year, a decline from 8.9% in 2015, as the drop through from lower sales was not entirely mitigated by cost reductions. Foundry reported an 11.8% RoS, another improvement over the prior year (2015: 10.5%). Key to the margin performance in both businesses was the reduction in operating expenses, largely as a result of the restructuring activities.

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

Net finance costs in 2016 of £14.5m were £0.9m below 2015. The key changes in 2016 were lower commitment and utilisation fees and lower costs associated with unwinding of discounted provisions. These were partially offset by higher interest on net retirement obligations.

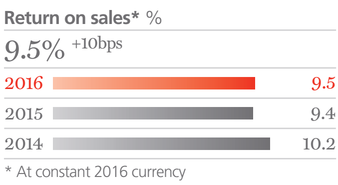
Our Headline PBT was £119.8m, 10.3% higher than last year on a reported basis. Including amortisation (£17.1m), the exceptional restructuring charges (£28.5m) and an offsetting pension settlement gain (£5.2m), our PBT of £79.4m was 2.6% higher than 2015. Headline EPS at 30.4p is 8.4% higher than 2015.

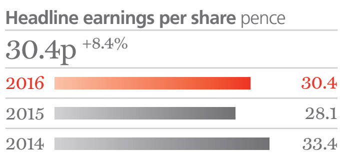
Objective: Ensure capital is deployed efficiently

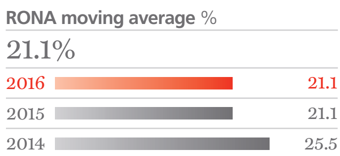
KPI: Free cash flow and working capital
Fundamental to ensuring we have adequate capital to execute our corporate strategy is converting our profits into cash, partly through strict management of our working capital. Free cash flow from continuing operations was £61.4m for the year, due in part to ongoing management of capital expenditure which was £6.8m lower than last year. Free cash flow from continuing operations in 2016 was £3.9m lower than last year on a reported basis as a result of higher investment in working capital and cash restructuring costs in 2016. Our cash conversion in 2016 was 94%.

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 2016 was 26.6% (2015: 26.3%), measured on a 12-month moving average basis. In absolute terms on a constant

	2016 Trading profit			2015 Trading profit				% change	
	As reported	**Acquisitions/ Disposals**	**Underlying**	As reported	Currency	Acquisitions/ Disposals	Underlying	Reported	Underlying
Steel	**79.2**	**1.7**	**80.9**	79.5	7.2	(0.1)	86.6	(0.5)%	(6.6)%
Foundry	**54.1**	**–**	**54.1**	44.5	5.9	–	50.4	21.6%	7.3%
Total Group	**133.3**	**1.7**	**135.0**	124.0	13.1	(0.1)	137.0	7.5%	(1.5)%







currency basis trade working capital increased by £12.9m, the majority of this increase is attributable to £10.2m of higher inventory that was built up in the last quarter to mitigate against the risk of customer interruptions as negotiations relating to plant closures were taking place. This inventory will be unwound in 2017.

Operating cash flow and cash conversion

	2016 £m	2015 £m
Cash generated from operations	**130.2**	146.2
Add: Outflows relating to restructuring charges	**16.8**	11.5
Add: Additional pension funding contributions	**7.7**	3.7
Less: Capital expenditure	**(31.3)**	(38.1)
Add: Proceeds from the sale of property, plant and equipment	**1.6**	1.1
Operating cash flow	**125.0**	124.4
Trading profit	**133.3**	124.0
Cash conversion	**94%**	100%

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, and trade working capital).

As with most of our KPIs, we measure this on a 12-month moving average basis at constant currency to ensure we focus on sustainable underlying improvements. Our RONA for 2016 was 21.1% (2015: 21.1%).

Objective: Maintain a strong financial position

KPI: Interest cover and net debt

As at 31 December 2016, the Group had committed borrowing facilities of £576.9m (2015: £532.4m), of which £158.3m were undrawn (2015: £181.1m). The accordion option to increase the amount of committed funds by up to £200m either from the existing bank group or by introducing additional banks on the same lending terms was not exercised during 2016 as we have sufficient debt capacity for the short term.

Net debt at 31 December 2016 was £320.3m, a £28.7m increase over 2015, despite our good cash generation. The main drivers of the increase were the impact of net foreign exchange movements of £30.3m, restructuring costs of £16.8m, and cash acquisition costs of £7.7m primarily related to the acquisition of the mould and tundish flux business of Carboox in Brazil at the end of the year.

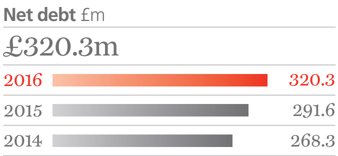
The Group's debt facilities have two financial covenants: the ratios of net debt to EBITDA (maximum three times limit) and EBITDA to interest (minimum four times limit). These ratios are monitored regularly to ensure the Group has sufficient financing available to run the business and fund future growth. At the end of 2016, the net debt to EBITDA ratio was 1.8x, the same as last year and EBITDA to interest was 13.4x (2015: 11.7x).

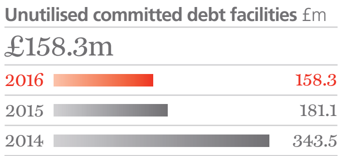
Further information on our finance costs can be found in note 9 to the Consolidated Financial Statements on page 121.

Financial Risk Factors

The Group undertakes regular risk reviews and at 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

Financial Review
continued





proposed mitigation. As referred to in the Viability Statement on pages 19 and 20, we consider the main financial risks faced by the Group as being end-market declines, leading to reduced revenue and profit as well as potential customer default, and a lack of liquidity, brought on by volatility or customer default. Important but lesser risk exists in interest rate movements and cost inflation but neither is expected to have a material impact on the business after considering the controls we have in place.

Our key mitigation of end-market declines is to manage the Group's exposure through balancing our portfolio of business geographically and by end-market 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. The second main financial risk of a lack of liquidity is mitigated through managing foreign exchange volatility by aligning the cost structure with revenue as best we can and matching the currency of our debt to underlying EBITDA. Counter party risk and customer default is mitigated by our relatively wide spread customer base, with no customer being greater than 10% of revenue, and credit control procedures.

Other Relevant Financial Information

Restructuring

We have reported extensively on the restructuring programmes that were launched in 2015 and are expected to be fully implemented during 2017. In 2016 we reported £28.5m of restructuring costs (2015: £14.6m) that were predominantly made up of redundancy and plant closure costs, along with related consulting fees. The cash costs in 2016 were £16.8m (2015: £11.5m) the difference reflecting amounts accrued for redundancy costs in Italy that will be paid out in 2017. We are carrying a restructuring provision forward into 2017 of £18.5m.

Taxation

A key measure of tax performance 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 (2016: £118.8m). The Group's effective tax rate, based on the income tax costs associated with headline performance of £31.4m (2015: £27.7m), was 26.4% in 2016 (2015: 25.5%).

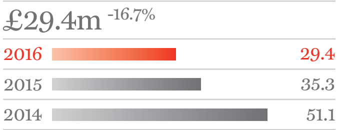
The Group's effective tax rate is sensitive to changes in the geographic mix of profits and level of profits, and reflects a combination of higher rates in certain jurisdictions such as India, Mexico, Germany and Belgium, nil effective rates in the UK and US due to the availability of unutilised tax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

The Group experienced such a change in mix in 2016, principally as a result of good business performance in India, giving rise to the increase in its effective rate compared to 2015.

Other key factors impacting the sustainability of the Group's effective tax rate are set out in Note 10.6 to the Financial Statements.

The income tax credit on separately reported items of £5.0m (2015: £2.9m) comprises £3.7m non-cash deferred tax movements relating to the amortisation of a deferred tax liability arising from

Net defined benefit pension deficit £m



the 2008 acquisition of Foseco plc (2015: £4.7m), £3.8m tax credits relating to restructuring charges (2015: £1.5m), tax charge of £0.4m (2015: nil) on pension curtailment gains, and a net reduction in the deferred tax asset previously recognised in respect of US tax losses and certain other temporary differences of £2.1m (2015: £3.3m).

The net income tax charge recognised directly in the Group statement of comprehensive income of £0.7m (2015: £1.6m credit) comprises a £0.7m charge (2015: £0.9m credit) in respect of deferred tax on pension obligations and £nil (2015: £0.7m credit) in respect of exchange differences.

The Group has released a £9.0m (2015: nil) provision for possible China taxes arising during the demerger of the Alent business in 2012. This followed the publication of additional guidance by the China tax authorities on the taxes applicable to the underlying transaction concerned. This release is included in discontinued operations in the Group income statement.

Capital expenditure

Capital expenditure in 2016 of £35.2m (2015: £35.0m) comprised £23.7m in the Steel division (2015: £24.4m) and £11.5m in the Foundry division (2015: £10.6m). The reduction in 2016 was in order to preserve cash and in recognising that a significant cash investment was being made on restructuring during the year. Capital expenditure on revenue generating customer installation assets has been maintained at £6.5m (2015: £6.2m).

Pensions

The Group has a limited number of historical defined benefit plans mainly in the UK, US, Germany and Belgium. The main plans in the UK and US are largely closed to further benefit accruals and 55% of the liabilities in the UK have already been insured. The total net deficit attributed to these defined benefit obligations at the end of December 2016 was £29.4m (2015: £35.3m), representing an improvement of £5.9m. The key movements giving rise to this were increases of £87.4m to the deficit arising out of changes to actuarial assumptions (mainly reducing discount rates) and £15.2m from exchange rate movements; offset by reductions to the deficit of £93.3m from asset returns, contributions of £8.8m and a combined settlement gain of £5.2m resulting from settlements and curtailments primarily in the US.

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 2016 £10.8m (2015: £10.7m) of contributions were made into the plans and charged to trading profit.

Corporate activity

Late in 2016 we acquired the mould and tundish flux business of Carboox in Brazil for £8.0m as an enhancement to our global mould and tundish flux product offering. The business is a strong regional player in South America. We continue to consider acquisitions as a key part of our strategy for growth.

Guy Young Chief Financial Officer
2 March 2017

Key Performance Indicators

The Board and management regularly monitor both financial and non-financial performance indicators to measure performance against objectives. The Board reviews these KPIs as part of its governance and risk management processes.

Objective	KPI	Purpose
Deliver growth	Underlying revenue growth	Provides an important indicator of organic (like-for-like) growth of Group businesses between reporting periods. This measure eliminates the impact of exchange rates, acquisitions, disposals and significant business closures
Deliver sustainable returns	Trading profit and return on sales	Used to assess the trading performance of Group businesses
	Headline profit before tax	Used to assess the financial performance of the Group as a whole
	Headline earnings per share	Used to assess the underlying earnings performance of the Group as a whole
	Return on net assets	Used to assess the financial performance and asset management of the Group
Maintain strong cash position	Free cash flow and average working capital to sales ratio	Used to assess the underlying cash generation of the Group. One of the factors driving the generation of free cash flow is the average working capital to sales ratio, which indicates the level of working capital used in the business
	Interest cover ratio and ratio of net debt to EBITDA	Both ratios are used to assess the financial position of the Group and its ability to fund future growth

Non-financial KPIs

Objective	KPI	Performance
Zero work-related injury and illness	Lost time injury frequency rate	Lost time injury frequency rate* 2016: 1.6 2015: 1.5 2014: 1.8
Maintain strong innovation pipeline	R&D spend	Total R&D spend** £m 2016: 28.6 2015: 25.8 2014: 26.1
Reduce energy use and carbon emissions	Total energy consumption	Gas use: +0.3% Electricity: -1.29%

Performance | **Link to remuneration**

Underlying revenue growth %

2016	-4.0
2015	-7.7
2014	3.5

Trading profit £m

2016	133.3
2015	124.0
2014	142.8

Return on sales %

2016	9.5
2015	9.4
2014	9.9

Delivery of value to shareholders is linked to remuneration through the Vesuvius Share Plan, which links the vesting of awards to total shareholder return

Read more about **Remuneration** on p79-98

Headline profit before tax £m

2016	119.8
2015	108.6
2014	127.8

Headline EPS pence

2016	30.4
2015	28.1
2014	33.4

EPS is linked to remuneration as a measure used in annual incentive awards and the Vesuvius Share Plan

Read more about **Remuneration** on p79-98

Return on net assets %

2016	21.1
2015	21.1
2014	25.5

Free cash flow £m

2016	61.4
2015	65.3
2014	59.2

Average working capital to sales %

2016	26.6
2015	26.3
2014	24.8

In 2016, working capital performance was linked to remuneration through the working capital 'kicker' applied to annual incentive awards

Read more about **Remuneration** on p79-98

Interest cover

13.4x

Net debt to EBITDA

1.8x

* Work-related illness or injuries which resulted in an employee being absent for at least one day – measured per million hours worked.

Read more about **Safety** on p54-55

** Constant 2016 currency.

Read more about **Sustainability** on p56-57

Operating Review
Steel Division

Providing Flow Control, Advanced Refractories and Technical Services solutions for the global steel industry.

Steel revenue £m

£942.0m +4.9%

2016	942.0
2015	897.6
2014	981.4

Steel trading profit £m

£79.2m -0.5%

2016	79.2
2015	79.5
2014	96.4

Steel return on sales %

8.4% -50bps

2016	8.4
2015	8.9
2014	9.8

The Steel Division

Vesuvius is a global leader in molten metal flow engineering. We achieve this by working closely with our customers to develop customised refractories, systems, services and technologies that enable them to improve their performance. The three businesses that comprise the Steel division are Steel Flow Control, Advanced Refractories and Technical Services.

Our Steel Flow Control products and systems are used extensively in the continuous casting process, enabling steel to be cast without interruption, whilst protecting it from the atmosphere when passing through the production process. Avoiding atmospheric contact significantly reduces contamination levels in the steel. Thus the quality, reliability and consistency of our products are critical in the quality of the finished metal being produced and the productivity, profitability and safety of our customers' processes.

Vesuvius' Advanced Refractories business supplies the steel industry and other process industries with high-performance refractory materials used for lining vessels such as blast furnaces, ladles and tundishes to enable them to withstand high temperatures and/or corrosive attack. These refractory lining materials are supplied in the form of powder mixes, which are spray-applied or cast onto the vessels to be lined ('monolithics'), or in pre-cast shapes and bricks.

Our Technical Services business complements existing product lines by bringing new services to our existing customers. Technical Services focuses on the capture of key manufacturing data, combining this with Vesuvius' strong presence and refractory expertise in metal casting to create new technologies and develop integrated expert process management systems.

"Through a renewed focus on cost base optimisation, acceleration of innovation and growth in emerging markets, Flow Control laid out in 2016 the foundation for a solid and sustained growth strategy in the years ahead."

Patrick André President, Flow Control

The Steel Production Process and Vesuvius

Our products can have a short service life (often a matter of a few hours) due to the significant wear caused by the high temperature, high thermal cycling and the erosive and corrosive attacks they suffer. Due to the specialised nature of our products and the high volume in which these products are consumed, Vesuvius has developed close, collaborative relationships with customers together with an extended global manufacturing network aligned with customer locations. Vesuvius focuses on gaining a fundamental understanding of customers' processes and delivering systems and products that are mission-critical for the demanding applications in which they are used.

Market Dynamics

Customers of the Steel division are principally steel producers and manufacturers of steel production equipment. In addition, the Advanced Refractories business supplies other high-temperature industries such as petrochemicals and cement, and therefore around 7% of revenues in the Steel division arise from non-steel-related process industries.

For our consumable products, steel production volumes are the critical driver of demand, particularly in the production of higher-quality steels where our highly technical products deliver the most value. Steel producers are continually striving to enhance their processes – reducing downtime and labour, increasing steel quality, reducing energy usage and enhancing metallurgical accuracy – parameters in which our existing consumables and solutions can be combined with our developing Technical Services offering to deliver value through better productivity, quality and safety.

The Global Steel Market in 2016

According to the World Steel Association, global steel production in 2016 was globally stable showing a small increase of 0.7% compared with 2015.

However, despite this overall stability, there were significant differences within regions, with declining production in EU28 (2.3%), South America (10.6%) and Africa (4.7%) and increasing production in India (7.4%), China (1.2%) and the Middle East (7.6%).

Steel Flow Control

Financial performance in 2016

Against this backdrop, Steel Flow Control reported revenues of £506.4m for 2016 an increase of 3.9% compared with 2015. On an underlying basis revenues were down 5.3% as compared with 2015. EMEA and NAFTA were impacted by the closure of steel plants where Flow Control had a high penetration rate, and this was the main contributor to the decline in underlying revenues. At the same time, sales and penetration rates continued to increase in India, the fastest growing steel market in 2016.

In this challenging market environment, the first results of the restructuring programme delivered a positive impact on the financial performance of the business line.

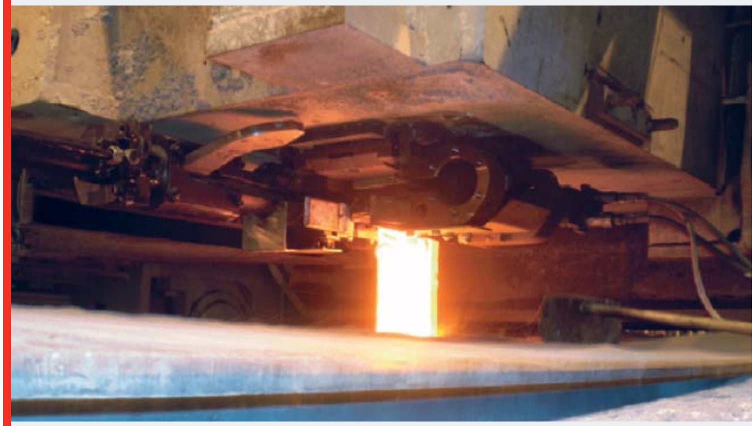
Cost base optimisation

Following a review of the Flow Control manufacturing network in Europe, the decision was made during the year to close three plants – Avezzano and Cagliari in Italy, and Ostrava in the Czech Republic.

Operating Review
Steel Division *continued*

Serving customers: Flow Control

Working with CSA Thyssenkrupp to continuously deliver higher productivity and safety in the production of high-quality steel grades.



Above: SEM 3085® tube changer and refractory

The Challenge

With the increasing competitiveness of the world steel market, CSA Thyssenkrupp required a solution to increase tundish life. This solution had to address not only the demand to consistently increase caster productivity but also the necessity to assure the highest standards of safety and quality.

Our Solution

Vesuvius introduced the latest generation SEM 3085® tube changer system, which improves ergonomics and reliability during the manufacture of high-quality steel grades. The SEM 3085® system also brings an increase in robustness and simpler handling, assuring consistent and continuous operation in demanding applications. Furthermore, it is compatible with Robotic Casting Technology.

The installation of this new system has been combined with a contract to supply the VISO® refractory parts, further contributing to the optimum control of steel flow from ladle to mould.

The Benefits

The number of heats per tundish was nearly doubled from 6 to 10 heats. This resulted in a substantial gain in productivity and an increase in metallic yield, whilst maintaining high standards of safety through the implementation of an emergency metal flow shutoff protocol, possible only with stopper/tube changer technology, even during the tube change operation.

The closure of these three plants was completed by year-end with production transferred to the remaining Flow Control plants in Europe, the productivity of which was significantly improved. The closures were not the only focus of the cost optimisation programme, with significant efforts also focused on Lean initiatives and efficiency across the European network of sites in line with our wider Group focus on Excellence.

The series of steps we took in Europe to optimise manufacturing efficiency benefited the Steel Flow Control financial performance in 2016 with our focus on cost saving offsetting a substantial proportion of the profits lost from declining sales. We expect these actions to have a further positive impact on Flow Control results from 2017 onwards.

Renewed focus on growth through technology and innovation

The Vesuvius commitment to outpace steel market growth through constant innovation and value-creating technological solutions for our customers was re-confirmed in 2016 as the core strategy of the Flow Control business line.

To achieve this objective and increase the efficiency of our R&D efforts, the decision was taken to streamline the portfolio of projects and concentrate on a reduced number of potentially high-impact projects, with improved project management organisation and increased resources.

We continue to focus our activities in centres of excellence for R&D, with Flow Control building on the strong work undertaken at our centre in Pittsburgh.

Growth in emerging markets

The penetration rates of Flow Control solutions in India and South America increased again in 2016. This trend is expected to continue in 2017 with a growing interest from customers in our technological offerings.

"In spite of an adverse market environment, Advanced Refractories delivered on its promise of customer focus, superior products, investment in innovation, business evolution in new market segments and growth in developing markets."

Tanmay Ganguly President, Advanced Refractories

However, due to overcapacity in the steel sector, some customers in these regions have been confronted with cash-flow issues, which has negatively impacted our payment terms. Thus, strict credit control procedures and customer selection criteria are being implemented to mitigate the financial risks associated with targeting growth in these and other developing markets.

Despite the challenges of refocusing business from established markets, growing the penetration rates of Flow Control business solutions – consumables, systems and services – in India, China, CIS, Middle East and South America will remain a strategic focus in the coming years.

See more about our Solutions Group in **Operating Review – Innovation** on pages 48-49

Development of flux products offering: acquisition of Brazilian mould flux business

Mould and tundish fluxes play an important role in the continuous casting process. Tundish fluxes insulate and prevent steel reoxidation. Mould fluxes provide lubrication and help to control heat transfer at mould level where the temperature and the fluid dynamics of molten steel as it solidifies, are fundamental parameters in ensuring consistency and quality in the steel slab. These fluxes are also in contact with our VISO* products and influence their service life, particularly in the highly corrosive and erosive slag layer. All of these elements combined, mean that fluxes are a critical element of continuous casting process control, directly affecting the quality of the final steel products.

The Flow Control division, already active in the flux business principally in EMEA and NAFTA, reinforced its presence in this market through the acquisition in December 2016 of the mould and tundish fluxes business of Carboox, the leading local South American flux manufacturer, increasing Vesuvius' presence in the South American market. We now expect flux sales to represent around 10% of Flow Control revenues worldwide.

Looking ahead

Through this renewed focus on cost base optimisation, acceleration of innovation and growth in emerging markets, Flow Control laid the foundation in 2016 for a solid sustained growth strategy in the years ahead.

Advanced Refractories

Financial performance in 2016

Advanced Refractories reported revenues for 2016 were £398.8m, representing an increase of 5.3% versus 2015. On an underlying basis, the year-on-year revenue decrease was 3.3% on 2015 levels, with performance tracking the challenging environment across global markets, driven in particular by the excess steel-making capacity in China increasing exports into some of our main markets.

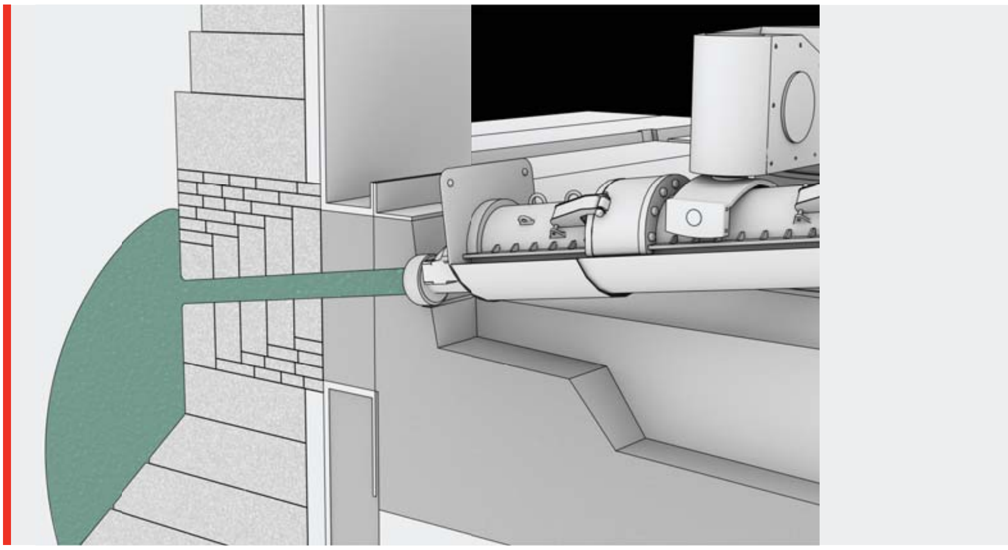
The year started with a glut of steel inventory and as worsening macro-economic conditions proved hugely demanding for the steel industry, a reduced demand for steel in oil and gas applications added to the challenging business environment. Against this backdrop, more positively, steel prices have recovered since the beginning of 2016.

The political uncertainty in the Middle East made it a fertile ground for lower-priced Chinese steel imports, affecting production in the region. However, this situation stabilised in the second half, with local production levels starting to recover. Similarly, the political instability in Brazil had a major impact on the economy – a major producer of iron ore and steel – leading to a significant drop in steel demand and a challenging foreign exchange situation. This forced some local producers to revise their footprint and significantly curtail steel production in the region.

Other than in Brazil and in the Middle East, our strategy to capture growth in emerging markets had positive outcomes. India, South East Asia, South Korea and Mexico continued to establish green field projects to bolster steel production

* Trademark(s) of the Vesuvius group of companies, some of which are registered in certain countries

Operating Review
Steel Division *continued*



capacity. Our longstanding presence and local manufacturing capabilities position us well to take advantage of these future growth opportunities.

Customer focus
An integral part of our success strategy depends on the level of collaboration with our customers. The frequent presence of our experts at our customers' facilities allows us a fundamental understanding of their needs and market requirements. As well as delivering improved current solutions, this information is fed back to our research centres, enabling development of the next generation of products. This is coupled with investment in new technologies at our R&D centres to provide our scientists with a better understanding of our products, processes and applications, pushing the boundaries of the solutions we can deliver to customers.

Our key challenge in 2016 was to keep our organisation focused and aligned with meeting our customers' expectations in very difficult market conditions for them. It is implicit that our key customer-facing people are technically excellent, and equipped with the best support from our R&D and technical teams, with clear lines of access to them. We continue to work hard to ensure that customers understand how to access the breadth and depth of Vesuvius' world-leading experience for the benefit of their business.

New product developments
Our continued investment in R&D is bearing fruit with new products for iron, continuous casting and steel finishing applications. In addition, we saw particular success in the aluminium industry which continued to show satisfying growth in 2016. Innovation remains a key element of the business line strategy as new technologies come out of the trial development stage and into industrialisation.

Our focus on product and process innovation is central to our strategy in Advanced Refractories. Our experience in material design and application, coupled with a thorough understanding of our customers' requirements, enables us to develop innovative solutions. New material and application technologies, deep understanding of the steel-making process and powerful simulation tools have allowed our technical experts to come up with breakthrough developments to help our customers reduce non-metallic inclusions in their steel, leading to higher yields on some of the most demanding applications like continuous casting of high-strength light-weight automotive, oil and gas, and stainless steel grades.

We are optimistic about our roadmap for the development of innovative products and solutions for downstream applications in the steel-making process. A new family of products for reheat furnace applications – named Thermogard* – is showing double digit improvements in its insulating properties, leading to significant reductions in energy consumption.

More than 50% of the world's steel is produced using an integrated route relying on blast furnaces to melt iron ore. In this area we have initiated the development of a new family of products which

Serving customers: Advanced Refractories

Developing more environmentally responsible blast furnace operations

Left: Mud gun inserting clay into the Blast Furnace taphole.

The Challenge

More than 50% of the steel produced in the world is produced by blast furnaces. After iron is melted in a blast furnace, it is extracted through a tap hole at the base of the furnace. When tapping has been completed, the hole has to be plugged using a ceramic clay material designed to withstand very severe operating conditions. When the furnace is ready for tapping again, a drill is used to open the hole and begin the tapping procedure once more.

Our Solution

Historically, the binder systems available to manufacture this ceramic plug utilised coal tar and petroleum pitch.

Thanks to our relentless commitment to innovation and our consideration for environmental issues, Vesuvius developed a new platform of 'green' binder systems for tap hole clay in blast furnace applications.

The Benefits

As well as complying with the strictest environmental regulations around the globe, this new binder technology has controlled the 'aging' profile of our tap hole clay, enhancing shelf life and reducing operational costs.

Thus Vesuvius' 'green' tap hole clay binder does not affect traditional performance requirements (specifically drill ability and long duration casting), produces very low or no PAH (polycyclic aromatic hydrocarbons), and is suitable for low, medium and high capacity blast furnaces.

present more forgiving conditions for the customer and are friendlier to the environment.

In addition, the vast experience gained over years of utilising cutting-edge computational flow modelling in continuous casting with products like our Turbostop* family of impact pads is now being applied to gather a deeper understanding of the fluid dynamics of other molten metal applications. This research is expected to extend the campaign life and productivity of blast furnaces which directly feed the steel shop. Increasing the campaign life of blast furnaces has a direct impact on the productivity of other processes downstream, like the steel melt shop, continuous casting and rolling mills. This computational modelling, along with new refractory technologies, is showing encouraging results by increasing the life of the refractories before the next repair is required.

Operational improvements

Quality and Lean remain the two cornerstones of our operational excellence initiative.

We have reinforced our commitment towards input and output control, targeting the implementation of Control Plans for our processes in manufacturing. Customer complaint management and use of tools like 8D and Failure Mode Effects Analysis (FMEA) in resolving and responding to quality issues will further strengthen the reliability of our manufacturing, and is a key area for ongoing focus. This granular understanding of our processes delivers a competitive advantage and is central to our customer offering.

Lean initiatives also form the core of our supply chain efficiency and cost competitiveness. Improved Sales and Operations Planning practices have helped to cut inventories and improve response time. We continue to use every opportunity to improve our process flow at manufacturing locations, with targeted capital investment delivering significant benefits in manufacturing flow, inventory management and labour and energy efficiency.

Organisational improvements

As our business in mature markets like NAFTA and Europe continues to evolve and growth in emerging markets like China and India moves forward, we are constantly realigning our resource base to align with activity levels. That involves reviewing our manufacturing base and talent pool on a continuous basis, both to anticipate and respond to changes. In 2016 we have completed several such projects that were initiated in 2015, and which have begun to deliver results. Sustaining talent and knowledge development is key to meeting this requirement. Regular review of the talent pool, succession planning and knowledge transfer across the organisation has been and continues to be a key priority.

Technical Services

Vesuvius' Technical Services business focuses on providing solutions that enhance the control and monitoring of our customers' production processes. The provision to our Steel and Foundry customers of sensors, probes, lasers and other measurement systems allows them to focus on

* Trademark(s) of the Vesuvius group of companies, some of which are registered in certain countries

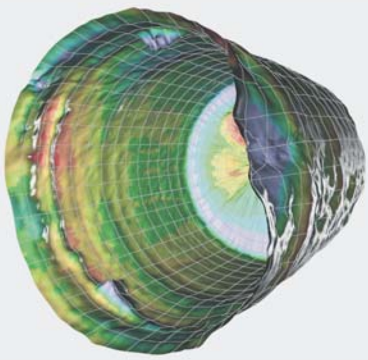
Operating Review
Steel Division *continued*

critical parameters within their processes, thus enabling them to refine their production methods to improve quality, lower production costs and maximise efficiency. Current solutions include Process Metrix laser technology which allows accurate assessment of refractory wear in the steel furnaces and ladles and the Accuoptix* Continuous Temperature System which provides customers with a continuous, reliable and cost-effective temperature data stream. Each of these products can also enable customers to understand their refractory needs more clearly. Another core capability is the mould audit, using the unique XMAT* device, in combination with computerised flow modelling, to provide our Steel customers with an 'expert eye' in the mould, allowing them to gain a fine understanding of liquid behaviour in the mould. The close management of these parameters can unlock more refined process management and drive steel quality improvement. The information derived from these measurements can be sold as a consulting service and used as support for improvements in refractory solutions.

The Technical Services business was formed in 2015 following the acquisitions of ECIL Met Tec and Process Metrix. A key objective of the business is to harness the entrepreneurial spirit and agility of newly acquired technology companies and to develop and market new solutions. The focus of R&D within Technical Services remains a key differentiator of this business, and is primarily aimed at the development of data collection systems, combined with interpretation technologies in a widening number of areas. We will continue to enrich our Technical Services offering in the medium term, by providing our most advanced customers in the metal casting field with decision-critical, process-enhancing information and analysis to enable them to improve their operations, both through immediate response to process parameters and from the learning available from the analysis and interpretation of longer-term, consistent data sets.

Financial performance in 2016

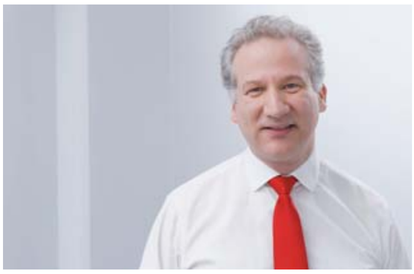
In its second year of operation, the Technical Services business generated sales of £36.9m an increase of 16.4% year on year on a reported basis. On an underlying basis, revenues fell by 17.1% when adjusted for acquisitions. The headwinds experienced in the steel industry in 2015 continued in 2016, leading to reduced customer activity and significantly lower customer capital expenditure. This situation was exacerbated by the poor economic environment in Brazil.



Serving customers: Technical Services

Process Metrix Laser Contour Scanner for Ladles: *Transforming refractory thickness data into valuable information for process control and improvement*

Left: 3-D ladle scan made with Anteris*, false-coloured to illustrate areas of acceptable (blue/green) and unacceptable (red/orange) refractory thickness.



"Whilst customer capital expenditure dropped in 2016, the Technical Services' Division extended its reach in the Vesuvius and Foseco portfolios and focused on increasing the scope of its technological solutions."

Alexander Laugier-Werth President, Technical Services

However, we saw the first benefits of the consolidation of Technical Services companies – Sidermes and ECIL Met Tec – accessing customer solutions across the wider footprint of the Vesuvius customer base. We now have an extended portfolio from which our solutions can improve customer performance, both in terms of quality and cost reduction.

During 2016, our focus remained on the development of new solutions, and continued efforts to increase penetration for existing solutions. From the second half of 2016 onwards, progress was made on accessing the Vesuvius and Foseco networks through enhanced sales support and on-site customer support not previously accessible to ECIL Met Tec and Sidermes as independent companies. This is expected to deliver increased activity for Technical Services, although the revenue from this developing business may not all be recorded in the results of the technical services business line. In the Steel business, Technical Services benefited from the continued growth of sensor technologies products, especially mould level sensors and slag detection, and combined offers of technology (lasers, robotics) and refractories, yielding significant savings for customers.

Strategies to promote future growth

Going forward, we will continue to review opportunities to acquire additional technological solutions to build an integrated business that can deliver a long-term, stable revenue stream from data gathering, information analysis and the related process improvement for our customers. A key focus will be on product quality – deploying the Vesuvius quality breakthrough initiative in our sensors and probes companies and focusing on value creation through the optimisation of quality and cost per ton for customers. We will continue to grow sales of Technical Services through our other business units, reinforcing technical and sales support capabilities to ensure we take maximum advantage of Vesuvius' global customer base. We will also focus on building a technology platform which will bring together the data collected by the instruments designed by all companies in the Technical Services business and develop algorithms that will help customers improve control and performance across their processes.

The Challenge

Is the refractory brick lining in the ladle too thin to run again? This was the risk, safety and cost dilemma for one of our major European steel customers. Historically, they had adopted a conservative approach to avoid potential catastrophic breakouts. Without adequate monitoring in place to correlate the feedback relationships between key processes and brick wear rate, limited progress was made towards optimising refractory lifetime.

Our Solution

Process Metrix installed its Anteris* based Laser Contouring System (LCS) to measure, quickly and accurately, the ladle brick thickness. With this quantitative measurement tool, the customer could correlate changes in process operating parameters with positive (or negative) impacts on brick wear rate. The LCS scan is so quick and convenient that measurements were taken on almost every ladle cycle, to build history and performance data for each ladle.

The Benefits

The primary benefit was a nearly 50% increase in average ladle lifetime, with some ladles achieving a nearly 100% increase. Quantitative analysis of the ladle barrel, bottom profile and wear rates resulted in improvements in stirring practice, tap hole geometry evaluation to improve yield, tap hole sand optimisation, and fine tuning of electromagnetic stirring parameters to reduce slag line wear.

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Operating Review
Foundry Division

Providing high-technology consumable products and services to the foundry industry.

Foundry revenue £m

£459.4m +8.3%

2016	459.4
2015	424.4
2014	463.0

Foundry trading profit £m

£54.1m +21.6%

2016	54.1
2015	44.5
2014	46.4

Foundry return on sales %

11.8% 130bps

2016	11.8
2015	10.5
2014	10.0

The Foundry Division

Our Foundry division trades under the Foseco brand, and generates about 30% of total Group revenue. Foseco is a world-renowned name that has become a by-word for reliability, technology and service in the supply of consumable products and associated solutions to the foundry industry.

Vesuvius in the Foundry Industry

The vehicle sector, comprising light vehicles (passenger cars and light trucks) and heavy trucks, consumes approximately 40% of worldwide castings, and a similar percentage of the revenue for the Foundry division. Other end-markets for foundry castings include machinery for the agricultural, construction and mining industries, power generation equipment, railroad and general engineering sectors. Our customers include the world's major automotive OEMs, truck producers and equipment manufacturers. Whilst Foseco products typically represent less than 5% of a foundry's production cost, they contribute significantly to improving product quality and manufacturing efficiency, whilst reducing the environmental impact of the casting process. Combined with our computer modelling, flow simulation and methoding capabilities, significant process efficiencies can be generated by Foseco.

The Global Foundry Industry in 2016

The worldwide foundry market continued to be affected by difficulties within the agricultural, construction and mining industries, resulting from the general decline in commodity prices. We saw reduced investment worldwide with the largest impacts in the US, China, Brazil, Indonesia and

"In a year of slowing in capital projects and poor steel foundry production but, with good performance in Automotive, we reduced central costs and consolidated manufacturing in the USA. We continue our strategic focus investing in R&D and training with the introduction of the Foseco online University. Year-on-year ratios improved despite a decline in revenue."

Glenn Cowie President, Foundry

Australia, and delays to new projects resulting in reduced demand for foundry castings for the extractive industries, as well as those used for related equipment and vehicles.

However, against this backdrop, light vehicle production globally was up 3.9% year-on-year and global heavy truck output increased 2.5%. Light vehicle production increases in India (+9.3%), China (+12.2%) and NAFTA (+2.5%) were partially offset by declines in South America (-12.7%) and North Asia (-4.8%), with significant heavy truck output decreases in South America (-20.5%) and NAFTA (-15.9%).

Financial Performance in 2016

Exchange rates had a considerable effect on the business in 2016 with the Foundry division reporting revenues of £459.4m in 2016, representing an increase of 8.3% versus 2015. On an underlying basis, revenue was down by 2.5%. Despite the decrease in sales, trading profit improved by 7.3%, and underlying return on sales increased by 110 bps as a result of the effects of an earlier commencement of restructuring measures in 2015.

Emerging market conditions continued to be difficult, especially in China, Russia and Brazil. Reduced revenues in Australia and South Africa reflected production declines in the auto sectors and extractive industries. However, sales in India increased 12.5%, benefiting from higher light vehicle and truck production, up 9.3% and 11.1% respectively, despite a very poor performance from the petrochemical industry.

Underlying Revenue in Europe decreased 4.0% year-on-year, despite increases in light vehicle (3.6%) and heavy truck (2.9%) production, reflecting drastic declines in output from steel foundries supplying mining, construction and petrochemical castings.

Underlying revenue in NAFTA decreased by 10.1% due to weakness in the agricultural, construction and mining industries, with US production continuing to move overseas. This was compounded by expected Mexican growth not occurring due to a reduction of activity in the precious metal industry. In South America, underlying revenue increased 2.2%, despite Brazil experiencing reductions in foundry castings in all sectors, with growth delivered mainly from market share gain and further penetration of the mining sector.

We continued with our global cost reduction and restructuring programme to respond to the challenging end-market conditions.

Customer Focus

Foundry business strategy promotes high value generation for our customers, helping them deliver better quality castings and enhancing their processes and efficiency. Foseco has a deep understanding of customers' priorities for growth and process improvement. To deliver this, we embed technical experts at customer premises, which enables them to identify potential process improvements in cooperation with their customers. This is coupled with a worldwide presence and excellence in product innovation, from our established network of technology centres,

Operating Review
Foundry Division *continued*

in which we have amassed extensive expertise in developing solutions that incorporate engineered systems and high-value consumables. These solutions are industrialised in our geographically dispersed manufacturing base, which leverages our global expertise whilst being deliberately located as close as possible to our customers.

This combination of product expertise and service delivery ensures that all our customers receive solutions that are tailor-made to their specific needs and opportunities, supplied on a reliable, just-in-time and competitively priced basis. This close customer interaction also allows us to understand the growing demand to supply technological solutions such as those being championed by our Technical Services business.

The Foundry Business Model

Our global presence is at the heart of the foundry business model. This allows the Foundry division to be:

> Resilient to end-market cycles, due to the flexibility of our diversified manufacturing footprint and adjustable cost base
> Profitable, as it allows value pricing for bespoke products
> Growth generating, as markets can be expanded by creating additional innovative products and solutions for customers

Foundry R&D

The investment in our world-class R&D facility in the Netherlands continues to deliver increasing benefits. In 2016, new product sales as a percentage of overall sales was the highest in the last decade. Whilst in 2016 this was not apparent in overall revenue, with a large percentage of new product sales occurring at the expense of old technology, it is the cornerstone of longer-term business development.

Shaping the Business for the Future

The restructuring of our Global Management and our Marketing & Technology teams undertaken in 2016 has been a success, supporting a clear focus on market segmentation and our investment in research, and giving a renewed focus on the rapidly growing non-ferrous sector. The investment in China in a completely new manufacturing plant experienced initial difficulties but is now running smoothly as we rapidly regain lost sales. In 2016, a major restructuring operation was carried out in NAFTA, consolidating our ladle lining business into the Cleveland site and mothballing the filter line to make more efficient use of excess capacity in other regions. Changes in the dynamics of the global foundry market are not over, and we continue to take action to ensure that our manufacturing footprint, technical expertise and customer-facing people are correctly located to support end-market growth around the world.

Focus on Developing Markets

Increases in casting volumes in emerging markets has been a characteristic of the foundry industry for the past several years. However, Foseco's solutions are best suited where this volume growth is coupled with technical sophistication at the customer, and the most demanding end-markets for the casting. To support the significant growth potential we anticipate in markets where industrial development continues to gather momentum, we have launched the 'Foseco University'. This is an online training facility covering all aspects of the foundry production process. Following successful beta trials this will now be commercialised as a training programme for our customers, and is in the process of being translated into German and Chinese. Whilst of particular use in developing markets, the Foseco University aims to communicate expertise and give technical support to our customers across the globe. Coupled with our expanding network of technical sales staff and application engineers within developing markets, this will ensure that customers in emerging markets have local access to our high levels of expertise and technical support.

Serving customers: Foundry

Reducing Energy consumption in zinc oxide production

Potential savings

up to 30%

Productivity increase

15%

Left: Crucibles for Non Ferrous Foundry Applications

The Challenge

The majority of the zinc oxide manufactured in the world is made by the 'indirect' or 'French' process whereby metallic zinc is melted in a graphite crucible and vaporised at temperatures around 1000 °C, at which point the zinc vapour reacts with oxygen in the air to form zinc oxide.

In this process, the high level of energy consumed and the slow production rate both have a major impact on process profitability, whilst the high energy consumption and related production of greenhouse gases are extremely important concerns for industries today and in the future.

Our Solution

By increasing the thermal conductivity of the crucible, it is possible both to reduce energy consumption and to increase productivity. ENERTEK* ZnO crucibles have been developed to meet these customer requirements. Savings of more than 30% have already been measured in the field.

The Benefits

In one specific study where ENERTEK* ZnO crucibles were used, the company showed an annual reduction in natural gas usage of 132,000 m³ which resulted in an annual cost saving of over €52,000 and a CO_2 emission reduction of 260 tons. The faster melting rate achieved using ENERTEK* ZnO crucibles also resulted in an increase in productivity of 15%.

* Trademark(s) of the Vesuvius group of companies, some of which are registered in certain countries

Operating Review
Innovation

"Customers' requirements for improved process control, safety, ergonomics and sustainability have all been key drivers of our R&D. Through targeted ideation and a robust new pipeline we continue to improve and expand our products and capabilities."

Alan Charnock Vice President and Chief Technology Officer

R&D spend 2016

£28.6m

New priority patent applications

15

Patents granted in 2016

130

Customer Focus

Reflecting during 2016 on 100 years of innovation in Vesuvius, it is clear that the demand for innovation in our end-markets has changed. The process changes adopted by our customers over the last 100 years were the main drivers for the development of our refractories and consumable products and equipment. Over the last decade, however, our customers have demanded better control of their existing processes, coupled with operator safety, ergonomics and environmental concerns. This new focus has been a key driver of our recent R&D efforts and has led Vesuvius to establish its Technical Services division and to promote our 'Solutions' strategy.

Our customers require us to be innovative and depend on us as a leading provider of technology. We continue to improve our existing products and capabilities and to deliver new products through a strong R&D organisation. We have expanded our capabilities and product range into new areas of automation, mechatronics and instrumentation, creating the full symphony of tools and products to monitor and manage the external factors that influence the quality and yield of our customers' products.

R&D Mission and Process

R&D's mission is to be a driver for profitable growth by developing innovative new products, solutions and technologies needed by the business, the market and our customers. To achieve this, we have to be proactive, spending sufficient time and resources to develop the next generation of breakthrough technologies, and also reactive dealing with the issues faced by our customers and changing market environments. We have put in place a robust R&D process to drive innovation and to ensure that we maintain this leadership position as the market continues to develop and pose new challenges. This process includes:

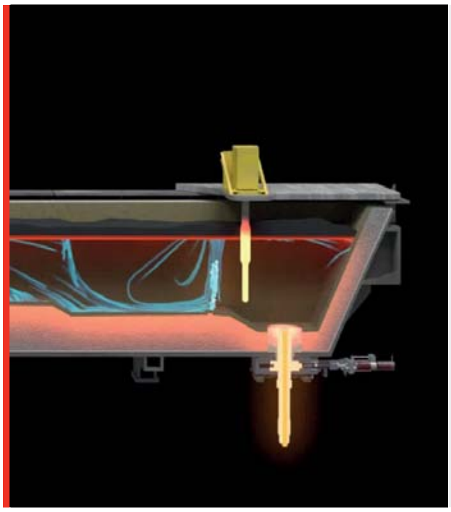
- Project Portfolio Management: aligning R&D with Group and divisional strategies
- Targeted Ideation: initiating the 'Idea to Launch' NPI stage gate process which manages all new product development – with the project pipeline reviewed on a regular basis to ensure alignment with the strategy and to identify gaps and redirect resources accordingly
- KPIs: setting measurable goals, for example, to double our New Product Sales (measured as the percentage of total sales derived from products launched within the last five years); to increase R&D productivity (R&D spend versus new product sales revenue); and at the same time to increase our efforts on breakthrough technologies to be sure we do not move only by incremental developments

All of our projects are therefore measured against the criteria of:

- Novelty – 'newness' and uniqueness?
- Inventiveness – creative and non-obvious?
- Differentiation – how different is it from what currently exists?
- Impact – how big is the impact of this difference?
- Sustainability – how long can we maintain the advantage?

In 2016 we spent £28.6m on R&D, representing approx. 2% of sales. Our New Product Sales have grown from 8% of total revenue in 2014 to 12% in 2015 and 14% in 2016, ahead of our target to double in five years. As a result, R&D productivity has improved from £3.5 to £7 of New Product Sales per £ of R&D spend.

We currently have 159 patent families, and 1,695 patents granted worldwide, with 579 patent applications pending.



Serving customers: Innovation

The root cause of a quality defect – not always what you expect.

Left: Monitoring and reacting to Tundish conditions can avoid quality defects created in the mould

The Challenge

Random Slivers – surface defects on the finished coil as a result of mould flux inclusions - can be created at the interface between the liquid steel and liquid mould slag.

Our Solution

Using our XMAT* mould audit unit at site to verify performance of our engineering solution, developed using computational fluid dynamics, the Solutions Group detected random flow pattern shifts in the mould. These fluctuations were confirmed to be the result of changes in the steel temperature entering the mould.

The Benefits

Monitoring tundish temperature with our Accuoptix* system, customers can react and homogenize tundish temperature using a tundish gas diffuser to reduce the occurrence of the mould flow pattern shifts that lead to sliver surface defects.

R&D Organisation

We continue to operate R&D in a two-tier structure. We operate a central research component, with a critical mass of expertise to pursue breakthrough technologies, and combine this with local development laboratories that also support breakthrough research, but which are primarily tasked with localisation of technologies, customisation of products, incremental developments and dealing with local technical support issues. We have over 300 R&D staff distributed in these centres throughout the world.

Enabling Technologies is our blue sky, long-range fundamental research function. It monitors technology trends, building the new technology platforms that will ultimately lead to new products and processes in our existing, adjacent and completely new markets. This is a core part of helping to ensure our continuing position as a technology leader. The Enabling Technologies team also manages our external partnerships with universities and other research organisations and represents about 10% of our total R&D spend.

The Solutions Group comprises the Simulation and Metallurgy Groups as well as a team of application specialists. The Solutions Group focuses on the provision of solutions to customers using existing technologies, to solve the problems they face or to improve the performance of their processes in terms of productivity, yield and quality. Our ability to understand the increased complexity and interdependence of different products and technologies, and their impact on end results, differentiates us from our competitors, who are often unable to construct or supply all the elements that constitute the 'Solution'. Finally, the Solutions Group also identifies opportunities for new product development from its holistic examination of customer processes.

Enhancing Quality for Our Customers

By capturing and analysing process data and using simulation and diagnostic tools we are able to monitor conditions and analyse samples from various locations in the customer's process. We can then identify the root causes of quality defects based on our understanding of the impact that changes in the customer's process have on the final product quality. The key for the future is to capture process and product property data, interpret it, and then react in real time to counteract the effects that deviations from normal practice may have on the finished product.

Looking Ahead

Through targeted ideation and a robust new product pipeline, we continue to improve and expand our products and capabilities. We have already made, and will continue to make, strategic acquisitions to accelerate the introduction of new technologies that complement our portfolio. By mastering all of these technologies we will continue to provide better solutions to the problems faced by our customers, both through our traditional business model and via the new Technical Services model.

Vesuvius is no longer supplying just the linings and plumbing – we now supply 'Solutions' that include every element involved in the process of engineering the flow of molten metal, to allow the efficient and cost-effective production of lighter, stronger, more resistant end products used to make, amongst other things: faster modes of transport, stronger and bigger buildings and structures, and thinner more reliable packaging.

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VESUVIUS

Section Three

Our Responsibility

In this section

Principles

We continue to focus our attention on the fulfilment of our ethical responsibilities, supporting the creation of long-term value for all our stakeholders.

Vesuvius is a geographically and culturally diverse group employing nearly 11,000 people, with 66 production sites in 26 countries, serving customers all over the globe. Maintaining a strong culture, and its consistent application in our worldwide approach to business, is therefore of fundamental importance. Our employees' engagement with our values and culture is not simply a matter of compliance, it is vital to our success and the sustainable delivery of the Group's strategy.

Values

The behaviours we champion in our employees are encapsulated in five Vesuvius values. We again celebrated these in 2016 with the Group's Living the Values Awards. Employees from 8 countries, nominated by their peers, came together to celebrate their outstanding individual contributions to the implementation of Vesuvius' values.

See more about the Living the Values Awards in **our People and community section** on pages 58 and 59

Code of Conduct

Our Code of Conduct places the pursuit of the highest possible ethical standards at the heart of Vesuvius' culture.

During 2016 we relaunched our Code of Conduct throughout the Group, having reviewed and updated it, to ensure that it remained relevant across all our jurisdictions and cultures and encapsulated the fundamental principles and behaviours we expect from those working for, and on behalf of, Vesuvius. It was published in all 29 of our major functional languages. In conjunction with this we relaunched our confidential, independent Employee Concern Helpline across the Group, with new dedicated local language capabilities.

A Framework for Business Integrity

Vesuvius has established a simple framework for explaining and delivering the principles we consider to be fundamental to our sustained success:

1. Vesuvius Values
2. Code of Conduct
3. Policies & Procedures
4. Training
5. Monitoring & Evaluation

Our Values

Creativity: Our commitment to technology and quality is the basis for our competitive advantage. Creativity allows us to develop innovative products and solutions and the continuous improvements that generate value through performance enhancement.

Reliability: Our solutions involve us in critical aspects of our customers' manufacturing processes. Our commitment to deliver consistent products and services gives them the level of confidence they require.

Embracing Diversity: Vesuvius is a global company built upon a true respect for local customs and experience. We recognise and embrace the potential for creativity that comes from the coexistence of so many different cultures.

Cooperation: Encouraging internal and external cooperation enables us to create unique solutions with our partners. Through cooperation, each Vesuvius employee is committed to the success of their community of colleagues and customers and that of the wider Group.

Integrity: At the heart of our promise lies the trustworthiness of all Vesuvius employees in their acts and words. Integrity, honesty and transparency are essential in all our exchanges.

Code of Conduct principles

- Health, Safety and the Environment
- Trading, Customers, Products and Services
- Anti-Bribery and Corruption
- Employees and Human Rights
- Disclosure and Investors
- Government, Society and Local Communities
- Conflicts of Interest
- Competitors

The Code of Conduct is available at **www.vesuvius.com**

Policies & Procedures

We continue to enhance the policies that underpin the principles set out in the Code of Conduct. These assist employees to comply with our ethical standards and the legal requirements of the jurisdictions in which we conduct our business. They also give practical guidance as to how this can be achieved. Amongst these policies are:

Speak Up: The importance of being able to speak up without fear of retaliation is the foundation of our compliance programme. The availability of the confidential Employee Concern Helpline for employees was re-communicated across the Group in 2016, and allows individuals to raise concerns, anonymously if they wish, knowing that these will be investigated and acted upon. No individual will ever be penalised or disadvantaged for reporting a legitimate concern.

Human Rights: The Group human rights policy reflects the principles contained within the United Nations Universal Declaration of Human Rights, the International Labour Organisation's Fundamental Conventions on Labour Standards and the United Nations Global Compact. The policy applies to all Group employees, sets out the principles for our actions and behaviour in conducting our business and provides guidance to those working for us on how we approach human rights issues. The Group commits not to discriminate in any of our employment practices and to offer equal opportunities to all. The Group respects the principles of freedom of association and the effective recognition of the right to collective bargaining and opposes the use of, and will not use, forced, compulsory or child labour.

Supply Chain: We continue the development of our supplier assessment programme – engaging with suppliers on their business practices to ensure security of supply to Vesuvius. This process is evolving, and will be integrated with the work we are doing to address the requirements of the Modern Slavery Act.

Prevention of Slavery and Human Trafficking

During 2016 we published our first transparency statement outlining the Group's approach to the prevention of slavery and human trafficking in our business and supply chain. We are conducting risk assessments as well as developing our policies and training to raise the awareness of our employees to this issue.

Training

During the year we continued to operate our training programme on the Code of Conduct and associated anti-bribery, corruption and other policies. We continue to develop our training processes to help our staff and counterparties understand that corruption will not be tolerated in the performance of our business.

Health and Safety

Vesuvius remains fundamentally committed to protecting employees, contractors and visitors in all areas of its activities.

Our goal is:

No lost time injuries	No repeat injuries	No harm to our people or contractors

Health and Safety

We have extended and intensified our Safety Breakthrough initiative to raise health and safety performance to best-in-class levels throughout the Vesuvius business, with a specific focus on employees based at customer locations.

Our Safety Breakthrough initiative set a goal of:

Training employees to work safely

47 Turbo.S training sessions were performed in 2016, involving 293 employees, from senior executive management to shop floor team management. Turbo.S training integrates all Vesuvius' good safety management practices in the workplace, and enables all Vesuvius members to work in a safe environment.

Permit to Work training, launched in the second half of 2015 in Europe, was extended worldwide to be implemented in all Group facilities, including customer locations, during the first half of 2016. We completed 97 training sessions for 600 managers from maintenance and operations, as well as shop floor group leaders. This training shared and extended recognised best practices throughout the Group.

Working safely

Ongoing deployment of standardised work continues to contribute to improved workstation safety. Daily safety audits have become a pillar of our Safety Breakthrough initiative. In 2016, more than 76% of our working population performed safety audits, generating a minimum of nine improvement opportunities per person, resulting in an improvement in worker safety. The audit programme involves employees at all levels – from the Group Executive Committee and safety specialists through to local site management, employees and contractors. In addition, the Take 2 initiative ensures that employees think again before performing any unusual or non-standard activity.

For new contracts in customer locations, Vesuvius now uses a formal risk assessment which aims to identify significant risks to our employees and contractors. This enables appropriate control measures to be agreed and implemented with the support of our customers in advance of work commencing.

Working in tidy plants

The continuing use of 5S, the workplace organisation method, throughout the Group drives workplace improvement. The added support of Vesuvius Lean specialists has been key to improving plant safety by removing hazards for employees and offering a clear, bright and safe working environment. Daily 5S audits led by team leaders ensure continuous improvement of working conditions and promote a safer workplace.

Involving accountable management for safety performance

Site safety improvement plans are now in place for all production sites with deployment being the direct responsibility of local managers. Poorly performing sites are expected to share their incident investigation and action plans and to formally present their improvement plans to the Group Executive Committee. Such an approach has proved highly successful in 2016, with the worst performing sites seeing their safety records improving through the year.

All injuries and dangerous occurrences continue to be analysed locally, with a formal presentation of findings, root causes and improvement actions cascaded through management. In addition, executive safety tours at customer locations have continued in 2016.

Accident and incident reporting and analysis
A significant investment in time and resources has been made over recent years to develop robust, comprehensive and timely reporting of incidents (including all fires, explosions and any major spill or other chemical releases). In its internal standards, Vesuvius continues to use more stringent definitions for lost time injuries (LTIs) and 'severe accidents' than the definitions used by the US regulator, the Occupational Health and Safety Administration. For all LTIs and Recordable Incidents, Vesuvius has implemented a full investigation based on the 8D problem-solving tool to identify the true root causes in order to prevent repeat incidents. As part of management reporting, the Board receives a monthly update on all LTIs and Recordable Incidents.

Safety Performance in 2016

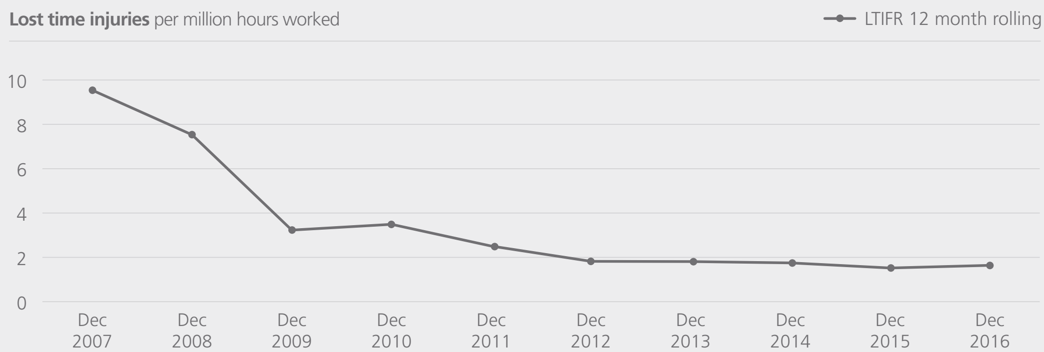
Despite all of these efforts, in March 2016, one of our Chinese operators had his right forearm amputated by the unexpected dropping of the upper mould on a friction press. Following a period of rehabilitation the individual is now working again at the plant. A major global review of our presses has been carried out with support from, and training by, external specialists to ensure that such a terrible occurrence never happens again.

We continue to work hard to reduce incident severity and develop robust standards and practices aimed at improving the safety and health of our people in all that they do. In this regard, road safety and machinery safety remain particular areas of focus for us.

Our efforts to improve health and safety continued to receive external recognition in 2016. Seven US sites received President's Awards from The Refractories Institute ('TRI'), for operating for a calendar year without a Lost Time Injury, whilst Vesuvius USA received the TRI Chairman's Award – for having the best overall company safety record. In addition, our UK sites received five pledge awards from the UK awards sponsored by the Health and Safety Executive and the British Ceramic Confederation. Our Spanish plant, Miranda de Ebro received honourable mention for its contribution to the reduction of occupational accidents and received a bonus from the Spanish Ministry of Employment and Social Security for not having had any accidents.

Safety performance in 2016

Lost time injuries per million hours worked



Sustainability

We are committed to contributing to the protection of the environment and to the positive integration of our site activities into local communities. We continue to develop and promote solutions that allow our customers to reduce their waste, energy consumption and CO_2 emissions.

Vesuvius and its Processes

The Board recognises that good environmental management is aligned with our focus on cost optimisation and operational excellence. The majority of our manufacturing processes are not energy intensive and do not produce large quantities of waste and emissions. Total energy costs are less than 3% of revenue, with only 2% of the total energy requirements across the Group consumed in the UK.

Total Energy Consumption

Overall Gas use increased by 0.3% in 2016 and Electricity use decreased by 1.29%. The underlying data showed that improvements in some areas were offset by deterioration in others. Vesuvius' senior engineers use the detailed analysis of normalised data to drive improvements across the business.

Environmental Monitoring

All our factory emissions are proactively managed in accordance with local regulations. Regular analysis enables us to take appropriate action to reduce our emissions and operate more efficiently. The Group monitors its energy consumption, worldwide CO_2e emissions and usage of water.

Greenhouse Gas Reporting

In reporting GHG emissions, we have used the GHG Protocol Corporate Accounting and Reporting Standard (revised edition) methodology to identify our GHG inventory of Scope 1 (direct) and Scope 2 (indirect) CO_2e. Both total emissions and normalised emissions have reduced in 2016. We report in kg of CO_2 equivalent ('CO_2e').

Global GHG emissions (Kg of CO_2e)

	2016	2015
Emissions source		
Combustion of fuel and operation of facilities	**340m**	362m
Electricity, heat, steam and cooling purchased for own use	**98m**	99m
Total GHG emissions	**438m**	461m
	-4.8%	
Vesuvius' chosen intensity measurement:	**511.0**	529.8
Emissions reported above, normalised to per tonne of product output	**-3.5%**	

Methodology We have reported to the extent reasonably practicable on all the emission sources required under Part 7 of the Accounting Regulations which fall within our Consolidated Financial Statements.

Scope 1 covers emissions from fuels used in our factories and offices.

Scope 2 relates to the indirect emissions resulting from the generation of electricity, heat, steam and hot water we purchase to supply our offices and factories. We have used data gathered to fulfil our requirements under the CRC Energy Efficiency scheme and emission factors from UK Government's and the IEA GHG Conversion Factors for Company Reporting 2016 in the calculation of our GHG.

Solar panels were installed at our Advanced Refractories facility in Port Kembla, Australia to supplement their energy usage. In the first 4 months of operation, during Spring in Australia, the facility saved >20 tonnes of CO_2 emissions, generating between 500 and 750kWh of electricity per day.

The Group also meets all of its obligations in relation to the Carbon Reduction Commitment Energy Efficiency Scheme, the Producer Responsibility Packaging Waste regulations and the Energy Saving Opportunity Scheme by which the UK has implemented the EU Energy Efficiency Directive.

Energy Conservation Plan

The Vesuvius Energy Conservation Plan was launched in 2011 with the objective of reducing our normalised energy consumption by 10% over the following three years. In June 2015 we reset our focus and set the objective of a 10% improvement (using 2014 as our base year) by 2018. Against that 2014 base, a 3% improvement has been realised towards this target. Managing our energy intensity is part of enhancing our cost competitiveness. It also contributes to improving the total environmental impact of our customers.

Our Customers and Their Processes

Under the Vesuvius and Foseco brands, we deliver a large range of solutions that help our customers improve the productivity of their operations. These solutions also improve the quality of our customers' products and reduce the environmental footprint of their processes.

Thermal optimisation and reject reduction are key factors in the processes for which we supply solutions. Vesuvius contributes to the reduction of its customers' energy usage and subsequent CO_2 emissions through insulating materials, flow management, facilitating extended manufacturing sequences and reduced downtime.

The iron and steel industry accounts for approximately 6.7% of total world CO_2 emissions and 18% of industrial CO_2 emissions, with, on average, 1.8 tonnes of CO_2 being emitted for every tonne of steel produced. With around 10 kg of refractory material required per tonne of steel produced, careful selection of energy-saving refractories can beneficially impact on the net emission of CO_2.

In the foundry process, the amount of metal melted versus sold is critical to a foundry's profitability. Foseco continuously works with its customers to increase the ratio of metal sold to metal melted. Sometimes this is as low as 40% and we work with them to increase it to 70%.

How Does Vesuvius Contribute?

Since 2011 we have used a CO_2 impact stamp to highlight the most energy efficient solutions in our portfolio of products and services and to support the deployment of energy efficient and sustainable solutions engineered by our technology departments.

Benefits are realised by:

> Enabling lighter, thinner and stronger components, leading to lighter vehicles and less energy consumption
> Improving customer processes through the supply of innovative consumables to reduce energy intensity and the CO_2e intensity ratio
> Reducing customers' refractory usage per tonne of steel produced through higher quality, longer service life products
> Increasing the level of sound castings produced per tonne of metal melted through improved mould design and the application of molten metal filtration and feeding systems

People and Community

The dedication and professionalism of our people is the most significant contributor to Vesuvius' success.

Talent Management

Ensuring leadership bench-strength and managing succession remain key areas of focus for Vesuvius. In order to meet the demands of the business, we operate the following programmes on a continuous basis:

> WINGS: Aimed at developing mid-level managers, being those who manage other managers or senior level staff. Wings, now in its seventh year, is held in spring each year at Vlerick University in Belgium. In 2016, 28 employees successfully completed the programme
> HeaTt: The Vesuvius technical university aimed at continuous development of Vesuvius personnel with courses ranging from entry to expert level
> HR4HR: Aimed at giving the Vesuvius HR community the professional skills to respond better to the talent management and development needs of the organisation

Talent Management evolved significantly in 2016 as our central talent management solutions were rolled out to local HR managers globally, driving performance management and talent identification deeper within the organisation.

During 2016, under the Vesuvius HR4HR project, four HR professionals underwent training in psychometric assessment and evaluation, each achieving 'Expert' status.

Vesuvius Global Mobility

A core part of Vesuvius' Global Mobility is the Columbus Program. This initiative recruits six young graduates on an annual basis, from two different countries where we have a presence. With the help of the local HR teams, we contact universities and interview prospective candidates. Three young engineers, specialising in Chemical Engineering, Material Science or Metallurgy, are selected in each country.

We are currently managing the fifth generation of the Columbus Program, as well as preparing for the sixth cycle. We now have a new cohort of three South African and three South Korean graduates, ready to start their careers at Vesuvius. In addition to technical skills, we are also looking to find the Vesuvius management of the future. Out of 30 Columbus graduates, 24 remain within the Group.

Living the Values

The Living the Values Awards programme, now in its fourth year, celebrates and recognises the commitment of our people to our five values of creativity, integrity, cooperation, embracing diversity and reliability.

On 26 May 2016, the Group Executive Committee and nominees came together for an event to recognise the winners of the Living the Values Awards.

François Wanecq commented, "I am very proud of all our winners who have demonstrated outstanding commitment to our values. The Living the Values Awards programme is a key pillar of our corporate culture and we will continue to invest and believe in our community."

Each winner was awarded a trophy specially designed for our 100th anniversary. Vesuvius also made a donation to each winner's chosen charity.

Francisco Javier Gallegos Valero, winner of a Living the Values Award 2016 for Reliability, supported Hogar de la Misericordia, an institution which has been serving children and the homeless for 30 years.

Vesuvius in the Local Community

Vesuvius not only supports employees' dedication to our values but is committed to the fulfilment of our social responsibilities.

Two examples of the charitable work done by Vesuvius employees are:

> In Mexico, Vesuvius is actively involved in many different campaigns to help the local community. One of these initiatives is collecting plastic bottle tops which are donated to Recolecta Sonrisas, an association which exchanges these bottle tops for chemotherapy sessions for underprivileged children.

> In Cleveland, US the Company supports Harvest for Hunger in association with the Cleveland Greater Food Bank.

Employee Diversity

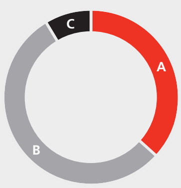
Vesuvius believes that the diversity of its employees is one of the core strengths of the Group. Having a balance of cultures, ethnicities and genders helps to promote the innovation and creativity that is key to our success. We recognise that, in line with other companies of our size and nature, we have unbalanced gender representation, and are seeking to address this as part of our wider commitment to diversity.

	Female	Male	Total	Female	Male
GEC member	0	11	11	0%	100%
Senior management[1]	9	95	104	9%	91%
Middle management	38	307	345	11%	89%
Directors of subsidiaries included in consolidation[2]	40	419	459	9%	91%
All other employees	1,359	9,021	10,380	13%	87%
Grand total	1,406	9,434	10,840	13%	87%

1. Of these 104 Senior Managers, 48 directly report to members of the GEC, and of these four are women.
2. 459 individuals in the Group are Directors of Group subsidiaries. Of these 9% are women. This disclosure is made to comply with regulatory requirements. It includes Directors of dormant companies and those with multiple directorships.

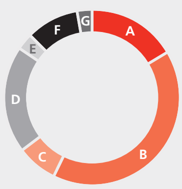
Our Employees

Employees by employment type



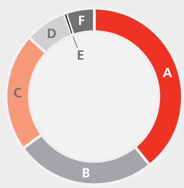
A. Salaried **3,991**
B. Hourly **5,927**
C. Temps **922**

Employees by region



A. China **1,790**
B. Europe **4,422**
C. India **818**
D. NAFTA **2,139**
E. North Asia **333**
F. South America **1,047**
G. South Asia **291**

Employees by business unit



A. Flow Control **4,256**
B. Foundry **2,815**
C. Advanced Ref **2,352**
D. Shared Services **815**
E. Head Office **45**
F. Tech Services **557**

Section Four

Governance

In this section

Chairman's Governance Letter

"Vesuvius' values encourage creativity, cooperation and integrity. By living these values we have established a culture that responds to business challenges in an innovative, sustainable and effective manner, for the benefit of all our stakeholders."

John McDonough CBE Chairman

Dear shareholder,
In another challenging year for our business, the Board has remained committed to the highest standards of governance, continuing to believe that robust governance and culture underpin business success.

In 2016 the Audit Committee conducted a competitive tender for the external audit and the Remuneration Committee reviewed the Directors' Remuneration Policy for presentation to shareholders at the 2017 AGM. Further details are contained in the Committee Reports. In addition, during the year, alongside its usual formal consideration of the Group's control framework, the Board undertook a 'clean-sheet' review of its key risks and uncertainties, reconsidering which risks are specifically significant for our business. This analysis supported the Board's deliberations on business strategy and performance, and formed the background to the Board's discussions on Viability. The results of this review can be found on pages 20 and 21. Our Viability Statement can be found on pages 19 and 20.

Corporate Culture

The publication, in July 2016, of the Financial Reporting Council's (FRC) 'Corporate Culture and the Role of Boards' refreshed Board debate on how to set the right tone from the top for the Group's corporate culture. The Board takes seriously its responsibility for shaping the culture of the Group, seeking to ensure that our values and ethical stance are reflected consistently in our behaviours and that this is embedded in the business by the Chief Executive and management team. As a Board we support the FRC's view that the correct corporate culture provides a competitive advantage and is vital to the creation and protection of long-term shareholder value. In 2016 we reinforced this culture with a relaunch of our Code of Conduct and Speak Up processes, underpinning our ongoing work to ensure that Vesuvius' values, culture, strategy and business model are aligned and that they position the Company for success.

UK Corporate Governance Code

The Company remains fully compliant with the current UK Corporate Governance Code (the 'Code'), being the version of the Code applicable to these financial statements. In April 2016, the FRC published a revised version of the Code which included minor changes following the implementation of the European Union's Audit Regulation and Directive. We have reflected on these and I am pleased to report that we are also compliant with these new requirements.

Board Composition, Evaluation and Training

Maintaining the correct balance of skills, knowledge and experience on the Board, and on the Committees which support it, is crucial to the Group's success. The Board remains strong and effective and your Directors draw on a diverse range of experience to enable constructive debate in the boardroom. This is candid, informed and inclusive, and presents appropriate support and constructive challenge to management. In September, Nelda Connors stepped down from her role as a Non-executive Director, due to the increasing demands of her other responsibilities. A process is underway to identify a new Non-executive Director to join the Board and I am pleased to report that encouraging progress is being made.

The Board's formal evaluation process, which was again externally facilitated this year, highlighted the Board's composition and its dynamics as particular strengths. It also highlighted that executing the Group strategy, focusing on succession planning, developing the next generation of exceptional senior managers, and identifying and managing risk, remain critical areas of Board focus for the coming year.

In 2016 the Board widened its focus on succession planning issues, additionally reviewing the management levels immediately below the Board – both in terms of securing a pipeline of talent for future leaders of the business and encouraging and enabling the diversity agenda. This focus on succession planning at executive and senior management levels is ongoing.

As part of its commitment to training and development, during the year the Board visited the Company's and a customer's facilities in Monterrey, Mexico. The Board also heard from external advisers on legal, financial and governance issues during the year. The Audit Committee conducted two 'deep dives' led by management on cyber risk and pension issues. The Board conducted a two-day strategy meeting in June, which enabled the Non-executives to examine and challenge executive management's plans for future growth. The Board also engaged directly with senior managers through business presentations at Board meetings, informal discussions at Board dinners and through individual Director visits to operations. The Board will continue to operate an open-access policy to Vesuvius staff members to promote transparency within the Group.

Looking Ahead

Your Board promotes a culture of openness, transparency and honest debate, setting the tone for the wider businesses. Each Board member fully contributes their expertise, knowledge and experience to Board discussions, with the central objective of securing the continued success of Vesuvius. As stewards of your Company, and with your support, the Board looks forward to continuing to discharge its duties on your behalf through 2017 and beyond.

Yours sincerely

John McDonough CBE Chairman
2 March 2017

In this section:
- **Board effectiveness** on p65
- **Board accountability** on p68
- **Audit Committee report** on p70
- **Nomination Committee report** on p77
- **Directors' Remuneration Report** on p79

Also see:
- **Risk** on p19
- **Principles** on p52

Governance Report

The Board of Vesuvius plc (the 'Company') is responsible for the Group's system of corporate governance and is committed to maintaining high standards of governance and to developing them to comply with best practice. This report describes the Company's corporate governance structure and explains how, during the year ended 31 December 2016, Vesuvius applied the Main Principles of the applicable September 2014 edition of the UK Corporate Governance Code issued by the Financial Reporting Council (the 'Code'). Where applicable, Vesuvius has also applied the revisions introduced in the April 2016 version of the Code, which will apply for Vesuvius plc's financial year ending 31 December 2017. Throughout the year and up until the date of this report, Vesuvius was in full compliance with the requirements of the Code.

A copy of the Code can be found on the FRC website at: www.frc.org.uk/Our-Work/Publications/Corporate-Governance/UK-Corporate-Governance-Code-2014.pdf

Roles and Responsibilities of the Board

Ultimate responsibility for the management of the Group rests with the Board of Directors.

The Board focuses primarily upon strategic and policy issues and is responsible for the Group's long-term success. It sets the Group's strategy, oversees the allocation of resources and monitors the performance of the Group. It is responsible for effective risk assessment and management.

The Board

The Board has a formal schedule of matters reserved to it and delegates certain matters to its Committees. It is anticipated that the Board will convene on seven occasions during 2017, holding ad hoc meetings to consider non-scheduled business if required.

The Chairman and Chief Executive

The division of responsibilities between the Chairman and the Chief Executive is set out in writing and was reviewed during the year as part of the Company's annual corporate governance review. No amendments were required. The interactions in the governance process are shown in the schematic below.

Board Committees

The principal governance Committees of the Board are the Audit, Remuneration and Nomination Committees. Each Committee has written terms of reference, which were reviewed and updated, where appropriate, during the year. These are available to view on the Company's website www.vesuvius.com.

For biographical details see **Board of Directors** on pages 22 and 23.

Board

Governance Committees

Committee	Chairman / Membership
Audit Committee To monitor the integrity of financial reporting and to assist the Board in its review of the effectiveness of the Group's internal controls and risk management systems	**Chairman:** Douglas Hurt **Membership:** All independent Non-executive Directors
Remuneration Committee To determine the appropriate remuneration packages for the Group's Chairman, Executive Directors and Company Secretary, and to recommend and monitor the level and structure of remuneration for other senior management	**Chairman:** Jane Hinkley **Membership:** All independent Non-executive Directors
Nomination Committee To advise the Board on appointments, retirements and resignations from the Board and its Committees and to review succession planning and talent development for the Board and senior management.	**Chairman:** John McDonough, Chairman (except when considering his own succession, in which case the Committee is chaired by an appropriate Non-executive Director) **Membership:** Chairman and any three Non-executive Directors

Administrative Committees

In addition, the Board delegates certain responsibilities on an ad hoc basis to a Finance Committee and Share Scheme Committee, which operate in accordance with the delegated authority agreed by the Board.

Committee	Chairman / Membership
Finance Committee To approve specific funding and Treasury-related matters in accordance with the Group's delegated authorities or as delegated by the Board	**Chairman:** John McDonough, Chairman **Membership:** Chairman, Chief Executive, Chief Financial Officer and Group Head of Corporate Finance
Share Scheme Committee To facilitate the administration of the Company's share schemes	**Chairman:** Any Board member **Membership:** Any two Directors or a Director and the Company Secretary

Group Executive Committee

The Group also operates a Group Executive Committee ('GEC'), which is convened and chaired by the Chief Executive and assists him in discharging his responsibilities. The GEC comprises the Chief Executive, Chief Financial Officer, the four business unit Presidents, the President Vesuvius North Asia, the Vice President Human Resources, the Chief Technology Officer, the President Operations and the General Counsel & Company Secretary. The GEC met five times during 2016 and is scheduled to meet six times during 2017. Its meetings are held at the London head office and major operational sites.

Governance Report
continued

Governance Structure

The Board
Responsible for Group strategy, risk management, succession and policy issues. Sets the tone, values and culture for the Group. Monitors the Group's progress against the targets set

Chairman
Provides leadership and guidance for the Board, promoting a high standard of corporate governance. Sets the Board agenda and manages meetings. Independent on appointment, he is the link between the Executive and Non-executive Directors

Chief Executive
Develops strategy for review and approval of the Board. Directs, monitors and maintains the operational performance of the Company. Responsible for the application of Group policies, implementation of Group strategy and the resources for their delivery. Accountable to the Board for Group performance

Senior Independent Director
Acts as a sounding board for the Chairman, an alternative contact for shareholders and an intermediary for other Non-executive Directors. Leads the annual evaluation of the Chairman and recruitment process for his/her replacement, when required

Non-executive Directors
Exercise a strong, independent voice, challenging and supporting Executive Directors. Scrutinise performance against objectives and monitor financial reporting. Monitor and oversee risks and controls, determine Executive Director remuneration and manage Board succession through their Committee responsibilities

Company Secretary
Advises the Chairman on governance, together with updates on regulatory and compliance matters. Supports the Board agenda with clear information flow. Acts as a link between the Board and its Committees and between Non-executive Directors and senior management

Board and Committee Attendance

The attendance of Directors at the Board meetings and at meetings of the principal Committees of which they are members held during 2016 is shown in the table below. The maximum number of meetings in the period during which the individual was a Board or Committee member is shown in brackets.

	Board	Audit Committee	Remuneration Committee	Nomination Committee
Chairman				
John McDonough CBE	8 (8)			4 (4)
Executive Directors				
François Wanecq	8 (8)	–	–	–
Guy Young	8 (8)	–	–	–
Non-executive Directors				
Nelda Connors	6 (6)	3 (3)	2 (2)	2 (2)
Christer Gardell	7 (8)			4 (4)
Hock Goh	8 (8)	5 (5)	4 (4)	4 (4)
Jane Hinkley	7 (8)	5 (5)	4 (4)	4 (4)
Douglas Hurt	8 (8)	5 (5)	4 (4)	4 (4)

Nelda Connors stepped down from the Board with effect from 30 September 2016. Christer Gardell and Jane Hinkley were unable to make an additional Board meeting, scheduled at short notice, due to prior engagements.

To the extent that Directors are unable to attend scheduled meetings, or additional meetings called on short notice, they receive the papers in advance and relay their comments to the Chairman for communication at the meeting. The Chairman follows up after the meeting in relation to the decisions taken. In 2016, the Chairman sought Christer Gardell and Jane Hinkley's views on the matters to be discussed at the Board meeting they were due to miss, prior to the meeting, and provided feedback to them on the outcome of discussions.

Board Effectiveness

Board Composition

The Board comprises seven Directors: the Non-executive Chairman, John McDonough CBE; the Chief Executive, François Wanecq; the Chief Financial Officer, Guy Young; and four Non-executive Directors. Nelda Connors also served on the Board as a Non-executive Director until her retirement from the Board on 30 September 2016. Douglas Hurt is the Senior Independent Director. Henry Knowles is the Company Secretary.

The Board focuses on ensuring that both it, and its Committees, have the appropriate range of diversity, skills, experience, independence and knowledge of the Company to enable them to discharge their duties and responsibilities effectively. The Board continues to look at diversity in its broadest sense – reflected in the range of backgrounds and experience of our Board members who are drawn from different nationalities and have managed a variety of complex global businesses. We believe that it is important to get the right balance of independence, skills and knowledge, both on the Board and across our businesses.

The Board's overall skills and experience, as well as Non-executive Director independence, were reviewed during the year as part of the annual corporate governance review. The Board's composition also formed part of the Board evaluation process. During the year, the Board considered its diversity, size and composition to be appropriate for the requirements of the business. Until Nelda Connors' resignation from the Board on 30 September 2016, two of the eight Directors (25%) were women and four (50%) were non-UK citizens. A fundamental part of the process of finding Nelda's replacement is to ensure that the balance of skills, experience and diversity is maintained going forward.

Committee composition is set out in the relevant Committee reports. No one, other than the Committee Chairman and members of the Committees, is entitled to participate in meetings of the Audit, Nomination and Remuneration Committees. However, as detailed in the Committee reports, each of the Committees operates in an open and consensual manner, and therefore, where the agenda permits, other Directors and senior management attend by invitation.

The Board considers that, for the purposes of the UK Corporate Governance Code, three Non-executive Directors (excluding the Non-executive Chairman), namely Hock Goh, Jane Hinkley and Douglas Hurt, are independent of management and free from any business or other relationship which could affect the exercise of their independent judgement. Christer Gardell is Managing Partner of Cevian Capital which holds 21.11% of Vesuvius' issued ordinary share capital and is not considered to be independent. He brings a wealth of commercial acumen to the Board. The Chairman satisfied the independence criteria on his appointment to the Board. Biographical details of the Directors are set out on pages 22 and 23.

Appointments to the Board

Recommendations for appointments to the Board are made by the Nomination Committee. Further information is set out in the Nomination Committee report on pages 77 and 78.

Time Commitment of the Chairman and the Non-executive Directors

The Chairman and Non-executive Directors each have a letter of appointment which sets out the terms and conditions of their directorship. An indication of the anticipated time commitment is provided in any recruitment role specification, and each Non-executive Director's letter of appointment provides details of the meetings that they are expected to attend, along with the need to accommodate travelling time. Non-executive Directors are required to set aside sufficient time to prepare for meetings, and regularly to refresh and update their skills and knowledge. All Non-executive Directors have agreed to commit sufficient time for the proper performance of their responsibilities, acknowledging that this will vary from year to year depending on the Group's activities. The Chairman in particular, dedicates a significant amount of time to Vesuvius in discharging his duties. The Board notes that the Chairman holds Chairmanships other than Vesuvius, but that only one of these is for a listed company. The other two Chairmanships are for much smaller private companies where the time commitment is limited.

All the Directors are expected to attend all scheduled Board and Committee meetings and any additional meetings as required. Each Director's other significant commitments are disclosed to the Board during the process for their appointment and they are required to notify the Board of any subsequent changes. The Company has reviewed the availability of the Chairman and the Non-executive Directors and considers that each of them is able to, and in practice does, devote the necessary amount of time to the Company's business. The Board notes that Hock Goh holds a number of other directorships, but that these other commitments typically only require a total of 25 days' work per year, with his Chairmanship of MEC Resources Ltd only requiring preparation for one meeting per year. In light of this the Board believes that Hock's additional commitments do not prevent him from properly fulfilling his duties as a Non-executive Director.

Governance Report
continued

Information and Support

The Board ensures that it receives, in a timely manner, information of an appropriate quality to enable it adequately to discharge its responsibilities. Papers are provided to the Directors in advance of the relevant Board or Committee meeting to enable them to make further enquiries about any matters prior to the meeting should they so wish. This also allows Directors who are unable to attend to submit views in advance of the meeting.

In addition to the formal Board processes, the Chief Executive provides written updates on important Company business issues between meetings and the Board is provided with a monthly report of key financial and management information. Regular updates on shareholder issues are provided to the Directors, who also receive copies of analysts' notes issued on the Company. For the distribution of all information, Directors have access to a secure online portal, which contains a reference section containing background information on the Company.

All Directors have access to the advice and services of the Company Secretary. There is also an agreed procedure in place for Non-executive Directors, in the furtherance of their duties, to take independent legal advice at the Company's expense.

Induction and Training

A comprehensive induction programme is available to new Directors. The core of the induction programme is designed in compliance with the UK Corporate Governance Code, and is tailored to meet the requirements of the individual appointee and the dynamics of the Group.

The Chairman, through the Company Secretary, continues to ensure that there is an ongoing process to review training and development needs. Directors are provided with details of seminars and training courses relevant to their role, and are encouraged and supported by the Company in attending them. In 2016, regulatory updates were provided as a standing item at each Board meeting in a Secretary's Report. External input on legal and regulatory developments impacting the Board or the Company was also given with specialist advisers invited to the Board and its Committees to provide briefings on overall market and economic developments including Brexit, regulatory enforcement, data protection and other general governance issues.

Governance in Action – Board Evaluation

1. Lintstock was retained to assist with the Board's 2016 Board evaluation process. Following its involvement in the 2015 review, the Board considered that Lintstock was well placed to assist the Board on both in-year performance and drawing consistent themes from year on year performance.
2. Following the annual Board Strategy meeting in June, Lintstock circulated a questionnaire to Board members inviting views on the Board's performance, focusing particularly on the conduct and content of its strategy sessions, and its activities around succession planning.
3. Lintstock analysed the responses and presented a report to the Board. The Board used the data collected and insights from Lintstock to formulate action points on the Board's approach to strategy and succession planning for immediate implementation.
4. In October Lintstock issued further questionnaires to members of the Board and the Company Secretary having consulted with the Chairman and the Committee Chairmen on themes to explore. Questions covered a wide range of measures, with particular emphasis on the Board's approach to risk management. Separate questionnaires addressed in more detail the performance of each Committee, and the effectiveness of the Chairman. Each Director also completed an individual performance evaluation, covering their own contribution to the Board and their personal development needs.
5. Lintstock produced a report on the Board and Committee evaluations that was circulated to all Board and Committee members.
6. The output from individual Directors' evaluations was used by the Chairman as the basis for one-on-one discussions. These were conducted with each Director in advance of the December Board meeting covering Board performance and the development of objectives for 2017.
7. The Senior Independent Director met with the Non-executive Directors to review the Chairman and then discussed the results of this review with the Chairman.
8. Action points and objectives were generated by the Chairman from the Board evaluation. These were reviewed at the December Board meeting, together with a review of the status of the 2015 action points. The results of this discussion were used to set the agenda for continuous Board performance improvement and monitoring for 2017.

Performance Evaluation

The Board carries out an evaluation of its performance and that of its Committees every year. In 2016, this evaluation was again externally facilitated by the corporate advisory firm, Lintstock. The Board evaluation was undertaken in two stages, with the first part taking place after the Board strategy meeting in June and the second part conducted after the October Board meeting. The focus of the former was principally on strategy and succession, with the latter covering Board oversight in general, risk management and internal control, the prioritisation of strategic objectives and Board efficiency. This 'in-year' approach to the Board's performance evaluation, tackling different topics at different stages of the year, has assisted the process of feedback and continuous improvement. As with previous years, the October evaluation also covered the overall performance of the Board's Committees, individual reviews of each Director and analysis of the performance of the Chairman.

The 2016 evaluation showed significant progress on most items from the 2015 review. However, in reviewing the 2015 action points greater progress had been made in some areas than others. The Board is considered to operate effectively with an appropriate composition and a boardroom environment that continues to encourage participation and candid discussion. Strategy in particular continued to be robust, well elucidated and received appropriate Board and management focus with the revised format for the Board Strategy meeting considered to have been beneficial. Amongst areas for ongoing improvement, although noting improvements had been made, it was felt that greater efforts to support development of staff members below senior management level could be taken. It was resolved that this would receive increased Board oversight going forwards. It was noted that the identification and management of risks, including risk appetite had received additional attention from the Board in 2016, following points raised by the 2015 evaluation. The evaluation concluded that the Board continues to promote open debate and is well supported in terms of information flow and that the key objectives of strategy delivery and succession planning continued to be well served by the Board.

Appointment and Replacement of Directors

The Board membership should not be fewer than five nor more than 15, save that the Company may, by ordinary resolution, from time to time vary this minimum and/or maximum number of Directors. Directors may be appointed by ordinary resolution or by the Board. A Director appointed by the Board must retire from office at the first Annual General Meeting ('AGM') after his/her appointment. A Director who retires in this way is then eligible for reappointment. The Board may appoint one or more Directors to any executive office, on such terms and for such period as it thinks fit and it can also terminate or vary such an appointment at any time. The Articles specify that at every AGM, any Director who has been appointed by the Vesuvius Board since the last AGM and any Director who held office at the time of the two preceding AGMs and who did not retire at either of them, shall retire from office. However, in accordance with the requirements of the Code, all the Directors will offer themselves for re-election at this year's AGM. The biographical details of the Directors offering themselves for re-election, including details of their other directorships and relevant skills and experience, will be set out in the 2017 Notice of AGM. The biographical details of the Directors are also set out on pages 22 and 23. The Board believes that each of the current Directors is effective and demonstrates commitment to his or her respective role. Accordingly, the Board recommends that shareholders approve the resolutions to be proposed at the 2017 AGM relating to the re-election of all the Directors then standing.

Directors' Conflicts of Interest

The Board has established a formal system to authorise situations where a Director has an interest that conflicts, or may possibly conflict, with the interests of the Company (Situational Conflicts). Directors declare Situational Conflicts so that they can be considered for authorisation by the non-conflicted Directors. In considering a Situational Conflict these Directors act in the way they consider would be most likely to promote the success of the Company, and may impose limits or conditions when giving authorisation or subsequently if they think this is appropriate. The Company Secretary records the consideration of any conflict and records any authorisations granted. The Board believes that the system it has in place for reporting Situational Conflicts continues to operate effectively. No Situational Conflicts were brought to the Board for authorisation during the year under review.

Governance Report *continued*

Board Accountability

Risk Management and Internal Control

The Board has overall responsibility for establishing and maintaining a system of risk management and internal control, and for reviewing its effectiveness. This system is designed to manage, rather than eliminate, the risks facing the Group and safeguard its assets. No system of internal control can provide absolute assurance against material misstatement or loss. The Group's system is designed to provide the Directors with reasonable assurance that problems are identified on a timely basis and are dealt with appropriately.

The Audit Committee assists the Board in reviewing the effectiveness of the Group's system of internal control, including financial, operational and compliance controls, and risk management systems. The key features of the Group's system of internal control are set out in the table below.

Risk Management and Internal Control – Key Features

Strategy and financial reporting	> Comprehensive strategic planning and forecasting process > Annual budget approved by the Board > Monthly operating financial information reported against budget > Key trends and variances analysed and action taken as appropriate
Vesuvius GAAP	> Accounting policies and procedures formulated and disseminated to all Group operations > Covers the application of accounting standards, the maintenance of accounting records and key financial control procedures
Operational controls	> Operating companies and corporate offices maintain internal controls and procedures appropriate to their structure and business environment > Compliance with Group policies on items such as authorisation of capital expenditure, treasury transactions, the management of intellectual property and regulatory issues > Use of common accounting policies and procedures and financial reporting software used in financial reporting and consolidation > Significant financing and investment decisions reserved to the Board > Monitoring of policy and control mechanisms for managing treasury risk by the Board
Risk assessment and management	> Continuous process for identifying, evaluating and managing any significant risks > Risk management process designed to identify the key risks facing each business > Reports made to the Board on how those risks are managed > Each major Group business unit produces a risk map to identify key risks, assess the likelihood of risks occurring, their impact and mitigating actions > Top-down risk identification undertaken at Group Executive Committee and Board meetings > Board review of insurance and other measures used in managing risks across the Group > The Board is notified of major issues and makes an annual assessment of how risks have changed > Ongoing assurance processes by the legal function and internal audit

Reviewing the effectiveness of Risk Management and Internal Control

The internal control system covers the Group as a whole, and is monitored and supported by the Group's Internal Audit function, which conducts reviews of Vesuvius' businesses and reports objectively both on the adequacy and effectiveness of the system of internal control and on those businesses' compliance with Group policies and procedures. The Audit Committee receives reports from the Group Head of Internal Audit and reports to the Board on the results of its review.

As part of the Board's process for reviewing the effectiveness of the system of internal control, it delegates certain matters to the Audit Committee.

Following the Audit Committee's review of internal financial controls and of the processes covering other controls, the Board annually evaluates the results of the internal control and risk management procedures conducted by senior management. This includes a self-certification exercise by which senior financial, operational and functional management throughout the Group certify the compliance throughout the year of the areas under their responsibility with the Group's policies and procedures. Since the date of this review, there have been no significant changes in internal controls or other matters identified which could significantly affect them.

In accordance with the provisions of the Code, the Directors confirm that they have carried out a robust assessment of the principal risks facing the Company, including those that threaten its business model, future performance, solvency or liquidity. They have also reviewed the effectiveness of the Group's system of internal control and confirm that the necessary actions have been taken to remedy any control weaknesses identified during the year.

The Group's principal risks and how they are being managed or mitigated are detailed on pages 20 and 21, and the Viability Statement which considers the Group's future prospects is detailed on pages 19 and 20. Risk management and internal control is discussed in greater detail in the Audit Committee report on pages 73 to 74.

The Audit Committee

The members of the Audit Committee are set out on page 70. The Audit Committee report which describes the Audit Committee's work in discharging its responsibilities, is set out on pages 70 to 76.

Executive Compensation and Risk

All of the independent Non-executive Directors serve on both the Audit and Remuneration Committees. They therefore bring their experience and knowledge of the activities of each Committee to bear when considering critical areas of judgement. This means that, for example, the Directors are in a position to consider carefully the impact of incentive arrangements on the Group's risk profile and to ensure the Group's Remuneration Policy and programme are structured to align with the long-term objectives and risk appetite of the Company.

Share Capital and Voting

Disclosure of the information regarding share capital, the authorisation received by Directors at the AGM regarding the issue of shares and the authority to purchase own shares, is contained on page 100 within the Directors' Report. There are no restrictions on voting contained in the Company's Articles of Association. Further details are set out in the Directors' Report on page 101.

Relations with Shareholders

The Board is committed to communicating with shareholders and stakeholders in a clear and open manner, and seeks to ensure effective engagement through the Company's regular communications, the AGM and other investor relations activities. The Company undertakes an ongoing programme of meetings with investors, which is managed by the Chief Executive and Chief Financial Officer. The majority of meetings with investors are led by them. In advance of the 2016 AGM, we wrote to our largest shareholders inviting discussion on any questions they might like to raise, making the Chairmen of the Board, the Audit Committee and the Remuneration Committee available to meet shareholders should they so wish. The Chairman, Senior Independent Director and Committee Chairmen also remain open for discussion with shareholders throughout the year on matters under their areas of responsibility, either through contacting the Company Secretary or directly at the AGM.

The Company reports its financial results to shareholders twice a year, with the publication of its annual and half-year financial reports. In addition, in order to maintain transparency in performance, it also issued two scheduled trading updates during 2016. One was published immediately prior to the 2016 AGM on 12 May 2016, and the second was published on 27 October 2016. In conjunction with these announcements, presentations or teleconference calls were held with institutional investors and analysts.

All Directors are expected to attend the Company's AGM, providing shareholders with the opportunity to question them about issues relating to the Group, either during the meeting or informally afterwards.

Audit Committee

Committee Members

Douglas Hurt (Committee Chairman)
Hock Goh
Jane Hinkley
Nelda Connors (resigned 30 September 2016)

The Audit Committee

The Audit Committee (the 'Committee') comprises all the independent Non-executive Directors of the Company, who bring a wide range of financial and commercial expertise to the Committee's decision-making and evaluation processes. Douglas Hurt is the Senior Independent Director and Chairman of the Audit Committee, having been appointed to these roles following the 2015 AGM. He was the Finance Director of IMI plc for nine years prior to that and has worked in various financial roles throughout his career. Douglas is also Chairman of the Audit Committee of Tate & Lyle plc, and a Chartered Accountant. This background provides him with the 'recent and relevant financial experience' required under both the 2014 and 2016 versions of the Code. The Company Secretary is Secretary to the Committee.

The April 2016 version of the Code introduces an additional requirement for the Audit Committee as a whole to have competence relevant to the sector in which the company operates. Vesuvius' Non-executive Directors have significant breadth of experience and depth of knowledge on matters related to Vesuvius' operations, both from their previous roles and their induction and other activities since joining the Board of Vesuvius. The Directors' biographies on pages 22 and 23 outline a range of multi-national business-to-business experience and expertise in fields including engineering, manufacturing, services and logistics as well as financial and commercial acumen. The Board therefore considers that the Audit Committee as a whole has competence relevant to Vesuvius' business sector.

Meetings

The Committee met five times during 2016. The Committee has also met twice since the end of the financial year and prior to the signing of this Annual Report. The Board Chairman, the non-independent Non-executive Director, the Chief Executive, the Chief Financial Officer, the Group Financial Controller, the Head of Internal Audit and the external auditor were all invited to each meeting. Other management staff were also invited to attend as appropriate. During the year, the Committee also met privately with KPMG and the Head of Internal Audit, without any executives present. Following the announcement in July of the selection of PricewaterhouseCoopers LLP ('PwC') to succeed KPMG as the Group's auditor for the year ending 31 December 2017, PwC has also been in attendance at the meetings.

Audit Committee meetings are conducted to promote an open debate, to challenge constructively significant accounting judgements, to provide guidance and oversight to management to ensure the business maintains an appropriately robust control environment and to provide informed advice to the Board on financial matters. The Chairman of the Audit Committee encourages open dialogue between the external auditors, the management team and the Head of Internal Audit between Audit Committee meetings to ensure that emerging issues are addressed in a timely manner.

During the year, the Committee members also participated outside formal meetings in the tender process for a new statutory auditor. In addition, as is the Audit Committee's established practice, the Committee members met and discussed business and control matters with senior management during site visits, informal meetings and Board presentations.

The outcomes of Audit Committee meetings were reported to the Board and all members of the Board received the agenda, papers and minutes of the Committee.

Role and Responsibilities

The main role and responsibilities of the Committee continue to be to:

> Monitor the integrity of the financial statements of the Company and the Group, and any formal announcements relating to the Group's financial performance
> Review the Group's internal financial controls and review the Group's internal control and risk management systems
> Establish and review procedures for detecting fraud, systems and controls for the prevention of bribery and oversee the Company's arrangements for employees to raise concerns about possible wrongdoing in financial reporting or other matters
> Monitor and review the effectiveness of the Company's Internal Audit function
> Make recommendations to the Board on the appointment, reappointment and removal of the external auditor and to approve the remuneration and terms of engagement of the external auditor
> Monitor and review the external auditor's independence, objectivity and effectiveness, taking into consideration relevant UK professional and regulatory requirements.

The Committee operates under formal terms of reference approved by the Board, which were revised during the year. The updated Audit Committee terms of reference, reflect the changes introduced by the April 2016 revisions to the Code, and take into account the Guidance on Audit Committees and Revised Ethical Standard 2016 published by the Financial Reporting Council ('FRC').

The Audit Committee's terms of reference are available in the Investors/Corporate Governance section of the Company's website, www.vesuvius.com. Within these Terms, the Committee and its individual members are empowered to obtain outside legal or other independent professional advice at the cost of the Company. These powers were not utilised during the year. The Committee may also secure the attendance at its meetings of any employee or other parties with relevant experience and expertise should it be considered necessary.

Activities in 2016

The Committee's agenda covered the usual standing items – the review of financial results, the effectiveness of the Group's internal financial controls, and the review of the internal control and risk management systems – as well as non-standard items, such as the tender for the 2017 external audit and targeted 'deep dive' topics. The Committee considered the impact assessment of IFRS 15 Revenue from Contracts with Customers – and reviewed the implementation plan for this in the 2018 financial year. As the Group responded to the changes in the short to medium-term outlook for the business, the Audit Committee continued to devote time to ensure that initiatives to mitigate potential risks and financial exposure remained robust and appropriate. The Committee challenged the adequacy of inventory and receivables provisions, the assumed growth rates and discount rates used for asset impairment assessments, as well as the accounting for and presentation of the Group-wide restructuring programme undertaken in response to the challenging conditions within our end-markets.

The Committee considered the Company's going concern statement and challenged the nature, quantum and combination of the unlikely but significant risks to the business model, future performance, solvency and liquidity of the Group that were modelled as part of the scenarios and stress testing undertaken to support the Viability Statement made by the Company in the 2015 Accounts. The 2016 Viability Statement, which was also critically reviewed, is contained within the Strategic Report and can be found on pages 19 and 20.

The Committee monitored the resourcing and delivery of the 2016 Internal Audit plan and approved the 2017 Internal Audit plan. The Committee monitored both the responses from, and follow up by management to, Internal Audit recommendations arising during the year and, where necessary, the Committee tasked management to verify their successful closure within defined timescales. The Committee also examined specific audit issues through 'deep dive' internal reviews, which included reviews of tax matters, cyber security, foreign exchange management and the Group's defined benefit pension arrangements.

The Committee devoted a significant amount of time, both in and outside formal Audit Committee meetings, to its oversight of the tender process to appoint a new statutory auditor for the financial year ending 31 December 2017. The tender culminated in the appointment of PricewaterhouseCoopers LLP as external auditor and the appointment of Mazars LLP to audit the non-material entities within the Group.

The Committee members believe that they received sufficient, relevant and reliable information throughout the year from management and the external auditor to enable the Committee to fully discharge its responsibilities.

The work of the Audit Committee is further elaborated in the paragraphs below.

Financial Reporting

The Committee fulfilled its primary responsibility to review the integrity of the 2016 half-year and 2016 annual financial statements and recommended their approval to the Board. The Committee also reviewed the two trading updates released during the year.

In forming its views, the Committee assessed:

> The quality, acceptability and consistency of the accounting policies and practices
> The clarity and consistency of the disclosures, including compliance with relevant financial reporting standards and other reporting requirements
> Significant issues where management judgements and/or estimates have been made that are material to the reporting or where discussions have taken place with the external auditor in arriving at the judgement or estimate
> In relation to the overall Annual Report, whether the Annual Report and Accounts taken as a whole is fair, balanced and understandable, taking into consideration all the information available to the Committee
> The application of the FRC's guidance on clear and concise reporting

The Committee actively deliberated and challenged reports from the Chief Financial Officer and Group Financial Controller. These were well prepared and, for areas of judgement and/or estimation, set out the rationale for the accounting treatment and disclosures, the pertinent assumptions and the sensitivities of the estimates to changes in the assumptions. KPMG also delivered memoranda for the half-year and year-end, stating their views on the treatment of these significant issues. KPMG provided a summary for each issue, including its assessment of the prudence of management's judgements or estimates. The Committee considered the overall degree of prudence applied this year, compared this with the prior year and concluded that the level of overall prudence remained unchanged.

To facilitate the Audit Committee's oversight of the finalisation of the financial statements, an extra Committee meeting was scheduled in February 2016 for the Committee to review early drafts of the 2015 Annual Report and Accounts, and provide constructive challenge, advice and guidance where necessary. This process has been formalised as part of the ongoing Audit Committee agenda and a similar meeting was held in 2017.

Significant Issues and Material Judgements

Exceptional Restructuring Charges

The Group restructuring programme continued in 2016 in response to the structural changes in the end-markets that we serve. The Committee has critically reviewed the treatment of the restructuring costs disclosed as separately reported items in 2016 and concluded that these have been treated consistently with the accounting policy. This ensures that only restructuring charges that are exceptional are reported separately, which enables the reader more clearly to understand the underlying results of the Group. The Committee's expectation is that the current exceptional restructuring programme will be completed in 2017.

Audit Committee
continued

Working capital provisions
Given the very difficult trading environment that certain of the Group's customers faced in 2016, the Committee challenged the adequacy of provisions held against both receivables and inventories (Notes 18 and 19) and after reviewing the ageing analyses, concluded that the provisions were appropriate.

Provisions
The Committee has been made aware of a number of potential exposures and claims arising from ongoing litigation, product quality issues, employee disputes, restructuring, environmental matters, onerous leases, indirect tax disputes and indemnities or warranties outstanding for disposed businesses. Due to the long gestation period before settlement can be reached, provisioning for these items requires careful judgement in order to establish a reasonable estimate of future liabilities. The Committee also assessed the strength of any insurance coverage for certain of these liabilities and challenged the accounting treatment for any amounts deemed to be recoverable from insurers. After due consideration and challenge, with expert advice sought in certain areas, the Committee is satisfied that there are appropriate levels of provisions set aside to settle third-party claims and disputes (Note 32) and that adequate disclosure has been made under International Accounting Standards (IAS) 1 (paragraph 129) in respect of estimation uncertainties that might impact the accounts in the following financial year. Where the outcome of an existing issue is uncertain, or where no reliable estimate of the potential liability can be made, no provision has been made and appropriate disclosure is included under contingent liabilities (Note 34).

Impairment of intangible assets
The year-end carrying value of goodwill of £662.2m was tested against the current and planned performance of the Steel and Foundry cash-generating units (CGUs). The Committee challenged both the determination of the relevant CGUs, the planned and terminal growth assumptions as well as the discount rates used in the assessments and the relevant sensitivities that were evaluated. The detailed assumptions, provided in Note 17, reflect both a reduction in global risk-free rates and the impact of the increasing contribution from the Group's operations in emerging markets. The Committee considered the Board-approved medium-term business plans, the range of industry longer-term projections and expert views on discount rates and, given that the models indicated that there remains significant headroom between the value in use and the carrying value, the Committee concurred that no goodwill impairment charges were required.

Income tax
Income tax remains a complex area where significant judgements are required to estimate both uncertain tax liabilities and the value of deferred tax assets.

The Committee challenged the assumptions used to arrive at the £41.9m provided for income tax payable which includes £31.5m for uncertain tax provisions as set out in Note 10. After discussions with internal tax experts and considering the results of recent tax audits and the views of the external auditors, the Committee concurred with management's judgement.

At the end of 2015, the Group recognised a US deferred tax asset of £57.1m. The Group has significant additional tax losses and other temporary differences in the US and elsewhere which have not been recognised, which are kept under review. The recognition of deferred tax assets for tax losses and other temporary differences is a highly technical area and the Committee has drawn on internal experts to understand the treatment. The future prospects for US profitability were carefully modelled by management and challenged by the Committee. Whilst recognising that difficult trading conditions look set to continue, the Committee concurred with management that the US forecast profits are considered sufficient to sustain a deferred tax asset in the US at the end of 2016 of £65.9m.

Pensions
Pension accounting is a complex area. The appropriateness of assumptions used (described in Note 28) were questioned by the Committee, as small changes in the assumptions could have material effects and bond yields in particular have been volatile. The assumptions made by management for each of the major schemes were compared by KPMG with other similar schemes. The Committee agreed the reasonableness of the assumptions. It was noted that a number of actions took place during 2016 as part of the de-risking strategies in place for the defined benefit pension funds and that these actions gave rise to pension fund settlements and curtailments that had an income statement impact. As a result of their materiality, the Committee concurred with management that these be reported separately.

In summary, the Committee resolved that judgements and estimates made on each of the significant issues the Committee considered were appropriate and acceptable.

Fair, Balanced and Understandable Reporting

The Committee considered all the information available to it in reviewing the overall content of the Annual Report and Accounts and the process by which it was compiled and reviewed, to enable it to provide advice to the Board that the Annual Report is fair, balanced and understandable. In doing so, the Committee ensured that time was again dedicated to the drafting process so that internal linkages were identified and consistency was tested. Drafts of the Annual Report and Accounts were also reviewed by a senior executive not directly involved in the year-end process who reported to the Committee on his impressions of clarity, comprehensiveness, balance and disclosure in the document. On completion of the process, the Committee was satisfied that it could recommend to the Board that the Annual Report and Accounts is fair, balanced and understandable.

Internal Controls

The Committee considered the process by which management evaluates internal controls across the Group. The Head of Internal Audit provided the Committee with a summary overview of the assurance provided by internal controls and the testing of these controls. KPMG also reviewed controls in the businesses within the scope of its audit, which review indicated a positive control environment, showing a further improvement on the prior year.

The Group is made up of several large operating units, but also many small units in geographically diverse locations. Consequently, segregation of duties, overlapping access controls on systems and remote management oversight can give rise to control vulnerabilities and fraud opportunities. The Group has not adopted a common ERP system as a Group-wide standard. Over time, management intends to move to more sharing of services, enabled by process and systems standardisation between businesses. This is likely to improve the overall internal controls in the smaller operating units.

In 2016 the Group undertook a number of compliance projects which included an analysis of the Group's use of third-party representatives and intermediaries, with an initial focus on perceived higher risk jurisdictions. The Committee continued with its assessment of the Group's potential exposure to bribery and corruption risks, conducting face-to-face visits to operations and reviewing financial records with the assistance of external advisers. The output of this and previous risk assessments will continue to be used to keep current the Group's policies and procedures for the management of anti-bribery and corruption risk, and forms part of the Group's ongoing assessment of compliance risks.

The Committee also continued to monitor and oversee the procedures for the receipt and treatment of allegations of improper behaviour and complaints by employees. The Group's Speak Up policy was relaunched in 2016, reinforcing the worldwide availability of an independent and confidential reporting service where employees may register their concerns about potentially irregular or unethical practices they experience in the workplace. Each year the senior financial, operational and functional management of the businesses self-certify compliance with Group policies and procedures for the areas of the business under their responsibility, which provides another safeguard. In 2016, the process of self-certification was further refined to include confirmation of the existence of adequate internal control systems throughout the year and the Committee reviews any exceptions noted in this bottom-up exercise.

After considering these various inputs, the Committee was able to provide assurance to the Board on the effectiveness of internal financial control within the Group, and on the adequacy of the Group's broader internal control systems.

Internal Audit

The Group's Internal Audit function operates on a global basis through professionally qualified and experienced individual members located around the world. They report to the Head of Internal Audit, based in London, who in turn reports directly to the Chairman of the Audit Committee. During 2016, the skill set of the Internal Audit team was further strengthened by the recruitment of an auditor with specialist IT knowledge.

The Committee received, considered and approved the 2016 Internal Audit plan which was constructed using a risk-based approach to cover the Group's control environment. The plan was based on the premise that all operating units are internally audited at least once in every three-year period, whilst maintaining a focus on smaller operating units. A third of operating units are now subject to internal audit twice in every three-year period, and Internal Audit annually audits each of the large operating entities located in Germany, the US, China, Mexico and Brazil. During the year the Committee also considered and approved changes to the Internal Audit plan as required. The internal audit coverage is greater than in previous years and audits are carried out with more in-depth analysis across legal entities and operating units. In addition, in 2016 many project-based reviews were undertaken.

In 2016, a total of 61 audit assignments, including seven unplanned audits, were undertaken by Internal Audit, covering 89% of the Group's revenue and 80% of the Group's profit before tax. The Committee received a 'dashboard' from the Head of Internal Audit at each of its meetings, detailing progress against the agreed plan and identifying key trends and findings from internal audit reports, along with progress on the resolution of actions agreed. Common themes emerging from internal audit reports were discussed and these discussions have informed the compilation of the 2017 Internal Audit plan. In 2016 the full audit plan was completed, with PwC and Grant Thornton retained as external outsourced auditors to supplement the Internal Audit team. The outsourcing process provides valuable learning opportunities and we expect to continue to use outsourcing in specialist areas or geographies in the future.

Where control issues or other problems are flagged by the fieldwork, they are recorded in a live web-based database into which management and operational entities are required to report progress against audit exceptions. In this way, Internal Audit can monitor the progress and adequacy of the remediation steps taken. Consequently, the Committee can be assured that appropriate and timely actions were taken by the responsible management. The Audit Committee also involved senior management as necessary to provide an update against high-priority actions and Internal Audit provided follow-up reviews as required to ensure there was clarity on the responsibility for delivery of solutions to the audit findings. In situations where audit findings required longer-term solutions, the Committee oversaw the process for ensuring that interim measures were established to mitigate risks while permanent solutions are pursued.

Audit Committee *continued*

During the year, the Committee arranged for a questionnaire-based assessment of the effectiveness of the internal audit function. The review, which canvassed the views of Non-executive Directors, the external auditor, senior management and members of the Internal Audit team, confirmed that the Internal Audit function had a good understanding of the business and operated within the correct scope. The review identified the opportunity for some improvements in reporting and in interaction with management on audit findings, as well as a more regular dialogue with the external auditor on the Group control and risk management framework. Overall internal audit was considered to have a strong reputation within the Group which is being further enhanced by its ongoing development programme.

Risk Management

As highlighted in the reviews of strategy and principal risks in the Strategic Report, risk management is inherent in management's thinking and is embedded in the business planning processes of the Group. The Board is responsible for identifying and monitoring the principal risks facing the business and with the Group Executive Committee ensures implementation of appropriate mitigating actions. The Audit Committee has continued its monitoring role. This framework for identifying and dealing with the principal risks is consistent with the Code.

Governance in Action – Deep Dive into Cyber Risk

1. As part of its ongoing monitoring of risk, the Audit Committee commissioned a review of peer company risks, and identified cyber risk as a topic for a 'deep dive' into the potential cyber threats posed to the Group.
2. Vesuvius' Chief Information Officer sponsored a review of the Group's cyber risks and presented his findings to the Committee, using the 2016 Government Cyber Health Check as the launching point from which to undertake this review.
3. Areas of risk sensitivity were identified. These were discussed in conjunction with the detailed steps taken to mitigate such risks and maintain a robust security environment. Specific hardware and software risks were noted, as well as an assessment made of the steps taken by the Group to limit third-party access to proprietary systems.
4. The Committee used the deep dive to assess the wider risks associated with cyber crime, such as deception and extortion through social engineering and the threats of ransomware. The Committee also considered the Company's existing internal education programmes to counter such threats.
5. The Chief Information Officer presented initiatives for further development and the Committee commended these to management.
6. An internal multi-disciplinary Committee has been constituted to advance the further assessment and management of cyber risk to ensure that this remains on the agenda of management and the Board.

As part of its review of the Group's principal risks and uncertainties, the Committee supported the Board in a coordinated, clean-sheet approach to the review of risks in 2016. Alongside the usual bottom-up risk mapping of the risk registers constructed and reviewed in each major business, the Head of Internal Audit coordinated the collation of the key operational risks identified by all members of the Committee and the Board, a process which was also undertaken by the Group Executive Committee. The input of Directors added individual views of top-down strategic risks into the process, drawing on the broader economic, environmental and organisational issues facing the Group. In monitoring the overall process, Committee members also fully participated in the Board review of risks and mitigating actions. The Committee determined that this approach once again enhanced the Group's process for identifying principal risks and uncertainties, which is set out on pages 20 and 21, and that this was robust and appropriate.

External Audit

The Committee and the Board are committed to maintaining the high quality of the external audit process. A questionnaire-based approach was used to assess the effectiveness of the 2015 external audit process. It also considered the quality of issues and challenges raised by KPMG to the Committee and to management across the Group, and the responsiveness of management to these challenges in generating financial reporting that is of the high standard expected by our shareholders. The improvement opportunities that were identified included more effective communication in certain overseas territories and an efficiency gain from the audit of an overseas shared service unit. These initiatives were actioned for the 2016 audit and a review of the effectiveness of the 2016 external audit was undertaken and concluded that the audit process was effective. The Committee also considered the Financial Reporting Council's Audit Quality Inspection of KPMG published in May 2016 and discussed their findings with KPMG.

Within the external audit process, communications between the Committee and KPMG were extensive. KPMG provided updates to the Committee at the half-year and running up to the year-end, including regular commentaries on significant issues and their assessment of prudence in the judgements and estimates made by management. In February 2017 the Audit Committee also held a preliminary meeting on year-end issues in advance of the finalisation of the financial statements in early March. Private sessions were held with KPMG without management being present, covering reporting and control issues in the context of the resourcing of the Group Finance team. The Chairman of the Audit Committee met on a number of occasions with KPMG to monitor the progress of the audit and discuss questions as they arose. The strength of the finance teams across the Group was also considered. In these sessions KPMG confirmed that its work had not been constrained in any way and that it was able to exercise appropriate professional scepticism and challenge throughout the audit process.

The independent auditor's report provided by KPMG on pages 106 to 108 includes KPMG's assessment of the risks of material misstatement in the accounts. These risk areas are discussed in the significant issues and material judgements comments above. The report also summarises the scope, coverage and materiality levels applied by KPMG in its audit. As part of the audit planning process and based on a detailed risk assessment, the Committee agreed a materiality figure of £4.0m for Group financial reporting purposes which is lower than last year (£4.6m) and, in line with similar groups, is set at about 4% of profit before tax, £102.7m (after adjusting for restructuring costs and gains on employee benefit plans). Importantly, much lower levels of materiality are used in the audit fieldwork on the individual businesses across the Group and these lower figures drive the scope and depth of audit work. Small operations were subject to statutory audit as required under local regulations, and, subject to risk assessment, were also reviewed by Internal Audit. Any misstatements at or above £0.2m were reported to the Committee.

There were no significant changes this year to the coverage of the audit which stood at 69% of the Group's revenue, 78% of profits and losses that made up profit before tax and 82% of assets. This coverage was considered to be sufficient by the Committee. The audit coverage is reflective of the long tail of smaller businesses within the Group that individually are not 'material' to the Group result.

The KPMG audit fee was constructed bottom-up on a local currency basis and was assessed in light of the audit work required by the agreed materiality level and scope. The Audit Committee approved a fee of £2.0m, which is the same as 2015.

External Auditor Independence

The safeguards to protect the independence and objectivity of the auditor that continued during the year include:

> Regular confirmation that the external auditor is independent of the Company in its own professional judgement
> Evaluating all the relationships between the external auditor and the Group, including those relating to the provision of non-audit services to determine whether these impair, or appear to impair, the auditor's independence
> The external auditor is prohibited from performing services where it:
  – May be required to audit its own work
  – Would participate in activities that would normally be undertaken by management
  – Is remunerated through a 'success fee' structure
  – Acts in an advocacy role for the Group

Vesuvius operates a policy for the approval of non-audit services. This policy details the pre-approval process for, and monitoring of, approved non-audit services provided by the external auditor. It also details the list of services which the external auditor is specifically excluded from providing. In keeping with ensuring the independence of the external auditor, the policy also addresses the employment of former members of the external audit team, imposing strict controls. Under the policy in force for the 2016 financial year (see details of the update conducted below), an annual budget for non-audit services where management proposed to engage the external auditor was presented for approval by the Committee as part of the overall budgeting process. Where a specific non-audit fee was likely to be in excess of £50,000, it had to be pre-approved by the Committee and, where appropriate, services were tendered competitively prior to the awarding of work. In practice, the Group did not seek to engage KPMG for non-audit services unless there were compelling advantages to doing so.

The EU framework for a more restrictive regime for non-audit services came into force in June 2016. The restrictions broadly prohibit external auditors' involvement in tax services, any services that involve playing a part in management decision making, preparing accounting records, designing or implementing internal control/risk management services or financial systems, certain HR services and other legal, investment and share-dealing services. There are also rolling three-year caps of 70% on the fees that each auditing entity and auditing network can receive for all non-audit services relative to the audit fee. In line with these changes, Vesuvius revised its non-audit services policy during 2016, which was approved at the Audit Committee meeting held in December 2016. This new policy states that Group companies are not permitted to use the external auditor for any "prohibited non-audit services" as specified by the UK Financial Reporting Council's Revised Ethical Standard 2016, unless subject to a permitted derogation. In addition, all audit related and permissible non-audit services proposed to be carried out for any Group Company worldwide by the external auditor must be pre-approved by the Chief Financial Officer, who thereafter will refer matters to be further approved by the Chairman of the Audit Committee or the full Audit Committee before an engagement is agreed. Any assignment proposed to be carried out by the external auditor must also have cleared the external auditor's own internal pre-approval process to confirm the firm's ethical ability to do the work. The revised non-audit services policy applies from 1 January 2017 to the audit of the financial year ending 31 December 2017, and for financial years thereafter. The policy is available on the 'Investors/Corporate Governance' section of the Company's website, www.vesuvius.com.

During 2016, the fees for non-audit services amounted to £0.1m, similar to last year. The fees comprised assurance services related to the review of the Company's half-year financial statements and limited taxation advice, as detailed in Note 6 on page 120, for which it was concluded that KPMG was best placed to support the Group. In light of the external audit tender, the Committee also monitored fees paid to other large accounting firms as part of the non-audit services fees review so as to determine where there might be any current or future conflicts of interest. In this context PwC withdrew from its role as outsourced internal audit support and from certain tax-related work.

Audit Committee
continued

Appointment of New External Auditor

In accordance with the confirmation given in last year's Annual Report and Accounts, the Audit Committee oversaw a tender process during 2016 to appoint a new statutory auditor for the financial year ending 31 December 2017.

A Selection Committee comprising members of the Audit Committee and finance management, was appointed to conduct the tender process, further details of which can be found in the Governance in Action box below.

Governance in Action – External Auditor Tender Process

1. In response to changes in legislation, and having considered the length of tenure of the incumbent auditor, the Board had advised shareholders of its intention to undertake an audit tender in the 2015 Annual Report and Accounts. The Audit Committee subsequently recommended to the Board the rotation of the external audit firm for the financial year ending 31 December 2017.
2. In conjunction with management, the Audit Committee agreed a suitable audit tender process. This process commenced with a detailed examination of the criteria upon which potential audit firms would be selected. These criteria included reputation, quality, independence, probity, global reach, capability to serve the needs of the business and cost effectiveness. It was agreed that consideration would also be given to adopting a bifurcated approach to the audit, whereby separate audit firms would be engaged to audit different parts of the business. It was thought that this could deliver advantages in respect of leverage of specialist knowledge and cost effectiveness.
3. A Selection Committee, comprising members of the Audit Committee and selected senior management, was nominated to oversee the process.
4. The Selection Committee reviewed a detailed Request For Proposal, and approved its issuance to potential bidders. It also approved the contents of a data room aimed to provide an overview of the Company's financial affairs to interested parties. Both 'Big 4' and other accounting firms were asked to participate in the tender.
5. By the end of May 2016, the Selection Committee had shortlisted and received proposals from five audit firms. These were invited to tender and, in June 2016, make presentations to the Selection Committee.
6. The Selection Committee evaluated the suitability of each bidder, considering the candidates' strengths and weaknesses, their match against the Company's criteria, as well as their 'fit' with the Company, management and the Board.
7. On completion of further interviews, a recommendation was made to the Audit Committee by the Selection Committee to appoint one firm to audit the Group accounts and a second firm to audit the non-material subsidiaries for 2017 onwards. This recommendation provided supporting evidence, ranking all five competing audit firms against consistent criteria, as well as identifying the lead candidates.
8. In July 2016, the Audit Committee recommended to the Board the appointment of two external auditors, with PricewaterhouseCoopers LLP to be selected and appointed as the lead audit firm for the audit of the Group, and Mazars LLP to be appointed to support this with the audit of non-material Group companies. It was noted that this bifurcated approach to the audit is intended to deliver coverage and cost efficiencies for the audit of the financial statements for the year ending 31 December 2017, and greater risk management focus on the non-material Group companies.
9. At the 2017 AGM the Board will request that the shareholders of the Company approve a resolution to appoint PricewaterhouseCoopers LLP as the Company's external auditor.

The Audit Committee considered the Selection Committee's recommendation to appoint a lead audit firm to audit the Group accounts and a second audit firm to audit the non-material Group companies. The Audit Committee agreed that this bifurcated audit approach offered an opportunity to improve the overall quality of the external audit, enabling increased focus on the non-material Group company risks by a second firm, whilst delivering significant savings in the overall audit process.

It noted that this approach would require well coordinated communication between the audit firms and management as well as careful planning of the audit strategy, to be led by the lead audit firm. The Audit Committee considered that the effectiveness of the arrangement should be reviewed after three audit cycles. On this basis, the Audit Committee submitted its recommendation to the Board for consideration.

In July 2016 the Board approved the appointment of PricewaterhouseCoopers LLP as external auditor for Vesuvius plc for the year ending 31 December 2017. Shareholder approval to confirm the appointment of PricewaterhouseCoopers LLP will be sought at the Vesuvius plc Annual General Meeting in 2017. Mazars LLP was approved as the second audit firm, with a focus on the smaller Vesuvius subsidiaries. The Audit Committee and Board believe this selection of audit firms is appropriate and that the bifurcated audit approach will deliver equivalent assurance to a single firm audit. The Committee is receiving regular reports on the status and progress of the auditor transition plans.

Audit Committee Evaluation

The Audit Committee's performance was evaluated as part of the overall externally facilitated Board and Committee performance evaluation, which is described in depth on pages 66 and 67. At the beginning of the financial year half of the Audit Committee and the Chief Financial Officer had only been in post for a matter of months and the focus of the Committee was to rapidly gain in-depth knowledge of the audit and risk environment. Through the combined efforts of the Audit Committee, external auditor and management staff this was swiftly achieved and has led to an effective Audit Committee that is commercially astute, ready to challenge the business, add rigour to significant accounting judgements and promote a strong control environment. This was reflected in the performance review of the Audit Committee, which overall rated its work highly against all measurement criteria.

The 2015 evaluation identified opportunities to strengthen the framework of the risk management programme and through, greater use by the Committee of 'deep dives', to explore some areas in more detail. During 2016 the Committee delivered against these initiatives, as detailed in the paragraphs above. Areas of focus identified by the 2016 evaluation of the Audit Committee for 2017 include managing the smooth transition of the external auditor, continuing to improve communications with management outside meetings and continuing the 'deep dive' initiative that proved so useful in 2016. The Committee will continue to seek improvements in its performance and report against its delivery of the actions identified by the review in the 2017 Annual Report and Accounts.

On behalf of the Audit Committee

Douglas Hurt Chairman, Audit Committee
2 March 2017

Nomination Committee

The primary focus of the Nomination Committee's activities during 2016 was on Board succession planning. The Committee also reviewed the succession and development plans for members of the Executive Committee and, following the resignation of Nelda Connors on 30 September, commenced the recruitment of a new Non-executive Director. The Committee continues to meet its responsibility to ensure that the Board is made up of individuals with the appropriate drive, abilities and experience to lead the Company in the delivery of its strategy.

Committee Members

John McDonough CBE (Committee Chairman)
Christer Gardell
Hock Goh
Jane Hinkley
Douglas Hurt
Nelda Connors (resigned 30 September 2016)

The Nomination Committee

The Nomination Committee is made up of myself as Chairman of the Company and any three of the Non-executive Directors. During the year I continued as Chairman of the Committee, though I would not act as Chairman if the Committee was considering the appointment of my successor. In that case, the Chairman would be an appropriate Non-executive Director. The Company Secretary is Secretary to the Committee. Members' biographies are set out on pages 22 and 23.

Role and Responsibilities

The Nomination Committee's foremost priorities are to ensure that the Company has the best possible leadership, maintains a clear plan for orderly Executive and Non-executive Director succession and cultivates the appropriate skills, experience and diversity in the Board's overall composition. Its primary focus is therefore on the strength of the Board, for which appointments are made on merit, against objective criteria, selecting the best candidate for the post. The Nomination Committee advises the Board on appointments, retirements and resignations from the Board and its Committees.

The Committee operates under formal terms of reference which were reviewed and confirmed during the year. The terms of reference are available on the Group's website www.vesuvius.com.

The Committee and its members are empowered to obtain outside legal or other independent professional advice at the cost of the Company in relation to its deliberations. These rights were not exercised during the year. The Committee may also secure the attendance at its meetings of any employee or other parties it considers necessary.

Process for Board Appointments

The Committee follows formal, rigorous and transparent procedures for the appointment of new Directors. When considering a Board appointment, the Nomination Committee draws up a specification for the role, taking into consideration the balance of skills, knowledge and experience of its existing members, the diversity of the Board, the independence of continuing Board members, and the ongoing requirements and anticipated strategic developments of the Group. The search process is then able to focus on appointing a candidate with the necessary attributes to enhance the Board's performance.

The Committee uses the services of search firms to identify appropriate candidates, ensuring that any selected firm is not in any way conflicted in the delivery of its role. In addition, the Committee will only use those firms that have adopted the Voluntary Code of Conduct addressing gender diversity and best practice in search assignments. A 'long list' of potential appointees is reviewed, followed by the shortlisting of candidates for interview based upon the objective criteria identified at inception. Non-executive appointees must be able to demonstrate that they have sufficient time available to devote to the role and all prospective Directors must identify whether they have any potential conflicts of interest as part of the process. The Committee recommends a preferred candidate, who will then meet other Board members. Finally, detailed external references are taken and following this the Committee makes a formal recommendation to the Board on the appointment. Preferred candidates are supported in undertaking their own due diligence on the Company and meeting with its advisers.

Activity in 2016

The Nomination Committee met four times during 2016. The Committee focused its time on the succession process for executive members of the Board as well as reviewing the members of senior management at the levels immediately below the Board. This included a detailed external assessment of Group Executive Committee members and a review of their personal development plans. Following the departure of Nelda Connors as a Non-executive Director in September, the Committee undertook a review of the current and future needs of the Board and its Committees – in particular reflecting on the balance of skills and experience of current Directors, and comparing this against a list of key skills generated in 2015. The Committee concluded that the Board would benefit from the appointment of a new Non-executive Director with expert knowledge of the industrial sector, together with a high degree of commercial acumen and global markets knowledge, and commenced a search on that basis. Spencer Stuart, a specialist recruitment agency which was appointed to conduct this search for suitable candidates does not have any other connection with the Company. I am pleased to report that encouraging progress is being made.

We have continued to monitor the development and integration onto the Board of the three new Directors who joined during 2015, Douglas Hurt, Hock Goh and particularly Guy Young who was appointed Chief Financial Officer in November 2015. They all undertook a full induction programme and have continued to gain insight into the business and meet executives throughout the organisation. François Wanecq and Guy Young have worked closely together to establish a highly effective working relationship, and together they drive the executive management of the business.

Board Composition

As part of the annual corporate governance review conducted during the year, the Committee examined the independence of the Board and the lengths of tenure of each of the independent Non-executive Directors. All Directors have served at a very senior level in global organisations, have international experience across a variety of industries, and most have spent a considerable amount of time resident outside the UK. The Nomination Committee believes that diversity underpins the successful operation of the Board. It recognises that this is a key ingredient in creating a balanced culture for discussions and minimising 'group-think', and continues with its policy to review the requirements for different skills, experience, background and gender in respect of the Board's composition. The Board supports the recommendations of Lord Davies on gender diversity and notes the recommendations of the Hampton-Alexander Review. The Board has also reflected on the Parker Review on ethnic diversity. The Committee will continue to consider the mix of skills, experience and knowledge required on the Board, and promote diversity not only on the Board but also throughout the wider business.

Senior Management Succession

During the year, the Committee's succession planning activity did not exclusively relate to the Board, but also encompassed the senior management levels immediately below the Board, aiming to support and encourage the growth of a consistent pool of talent able to step up to the top roles in future years. The Committee continued to monitor the execution of development plans for the Group Executive Committee, and supported the Board in its remit to understand the process for the development of high potentials throughout the business. The Board met key executives throughout the Group in order to gain a greater understanding of the breadth and depth of management talent. This process included a series of presentations to the Board by business unit, functional and geographical heads to ensure that the Board was exposed to the appropriate breadth of senior management. This process provides the basis for the Board's ability to adopt a more informed approach to executive succession planning and talent development across the Group. The focus on succession planning at executive and senior management levels remains ongoing.

Committee Evaluation

The Committee's activities were part of the externally facilitated evaluation of Board effectiveness during the year. The results showed that the Committee continued to perform effectively against all the evaluation criteria, with an appropriate composition, a comprehensive agenda and the correct focus. Going forward, the Committee will also concentrate on the identification and development of a diverse talent pool of individuals below the Group Executive Committee. This is of key importance to ensure that the Group maintains a stream of talented individuals to lead the business to future success.

On behalf of the Nomination Committee

John McDonough CBE Chairman, Nomination Committee
2 March 2017

Directors' Remuneration Report

Remuneration Overview

Dear shareholder,

On behalf of the Remuneration Committee, I am pleased to present the Directors' Remuneration Report for 2016. The Remuneration Report is split into two sections, a new Directors' Remuneration Policy and the Annual Report on Directors' Remuneration. Further details of the new Remuneration Policy which will be subject to a binding shareholder vote at the 2017 AGM, are given below. The Annual Report on Directors' Remuneration sets out details of the pay received by the Directors in 2016 and explains how we intend to apply our Remuneration Policy in 2017. It will be subject to an advisory shareholder vote at the 2017 AGM.

Review of Remuneration Policy and Implementation in 2017

This year we are required to table our Remuneration Policy for shareholder approval at the AGM. This will be the second triennial vote on the Remuneration Policy since that requirement was introduced. As a consequence, during 2016, the Remuneration Committee conducted a review of the Directors' Remuneration Policy, to ensure that it continues to support delivery of our strategy.

Our overarching philosophy for remuneration continues to be to attract, retain and motivate individuals of the calibre necessary to implement our business strategy successfully. In setting the policy, we aim to provide incentives that encourage sustainable growth, but do not reward underperformance or incentivise poor behaviours. The Remuneration Committee also understands that the incentive structures we employ need to support the delivery of long-term value to our shareholders. Consequently, our Remuneration Policy is designed to reward the achievements of Executive Directors when deserved, by providing a meaningful portion of remuneration linked to performance but subject to clawback.

During the year, the Committee considered each of the elements of our existing remuneration structure for Directors. We spent time discussing the views of our shareholders and reflecting on the numerous recent developments in governance guidance. We received advice from the Remuneration Committee adviser, Deloitte, and considered the pay and employment conditions of other Vesuvius employees. We concluded that the existing combination of variable incentives – an Annual Incentive and a Long Term Incentive Plan awarding Performance Shares remained the most suitable mechanism for compensating Executive Directors. Consequently, our new policy does not differ materially from the existing policy.

Our Annual Incentive Plan is clear and simple to operate, and incentivises Directors to achieve key near-term financial and strategic objectives for the Group. We propose to retain a policy that allows the Committee flexibility to set these objectives in accordance with the Group's specific priorities each year. In 2016, 80% of this incentive was focused on Group headline earnings per share, adjusted for working capital performance, with the remaining 20% based on the achievement of personal objectives. For 2017 the Committee has decided to increase the emphasis on cash generation, so that this year the Executive Directors' annual incentives will be based 60% on Group headline earnings per share, 20% on the Group's cash conversion (defined as operating cash flow divided by trading profit) and 20% on specified personal objectives. We believe this set of metrics will focus the Executive Directors on delivering key objectives for the Group.

In order to further align the interests of our Directors with those of our shareholders, we are introducing in our Remuneration Policy a requirement for deferral of a proportion (normally 33%) of the Annual Incentive into awards over shares for three years. We trust our shareholders will welcome this enhancement.

The Vesuvius Share Plan (VSP) aligns the Executive Directors' interests with those of shareholders through the delivery of shares, and rewarding them for growth in shareholder value and earnings. The VSP allows the Company to make a variety of share-based awards, although since its inception we have only made annual awards of Performance Shares under the plan. Having considered the alternatives of restricted share and deferred share awards, the Committee concluded Performance Share awards should be retained, where outcomes rely on earnings growth and share price performance, aligning Executive Directors' remuneration with the Company's long-term objectives. Other performance conditions were considered, including those raised by shareholders during our investor relations meetings. However, having examined the alternatives, we continue to believe that earnings per share (EPS) and relative total shareholder return (TSR) as performance conditions are widely supported, and represent the most appropriate measures for assessing the overall long-term performance of the Group.

The principal elements of the Remuneration Policy for Executive Directors are also applied to other members of the Group Executive Committee ensuring a cohesive remuneration structure across the senior management team. All members of the Group Executive Committee are subject to the same two to three-year salary review cycle as the Executive Directors, and all participate in the Annual Incentive and Vesuvius Share Plans. Whilst the level of awards payable under these plans varies, the whole team is incentivised to pursue common strategic objectives for the Group.

Remuneration Overview
continued

As part of the review of the Remuneration Policy, we also considered the market competitiveness of our reward package. The broad international scale and nature of the Company's operations require experienced leadership. Whilst recognising the inflationary effect of using market data, the Committee also needs to ensure the Group can acquire and motivate appropriate talent to successfully implement our business strategy. Given that there is not a clear comparator group of companies for Vesuvius, this was judged in the context of other FTSE 250 companies and relevant international sector-specific companies to reach a rounded judgement. Following this review, the Committee concluded that the new Policy should specify the same bonus opportunity for all Executive Directors (62.5% of base salary for on-target performance and 125% at maximum). The previous policy differentiated between the Chief Executive and other Executive Directors. Other than the deferral detailed above, no other material changes to the current policy are proposed.

In line with the Group's longer-term approach of reviewing the salaries of Executive Directors and senior executives every two to three years, there are no changes to either of the Executive Directors' salaries in 2017. The Chief Executive's incentive opportunity in 2017 will also remain unchanged at 125% and 200% of salary for Annual Incentive and Performance Shares respectively. However, in the light of the Chief Financial Officer's contribution since his appointment in November 2015, the Committee has concluded that in 2017 he should be awarded Performance Shares equivalent in value to 150% of his base salary (2016: 125% of base salary). This remains within the 200% maximum specified by the pre-existing policy. In addition his Annual Incentive opportunity for 2017 should be aligned with that of the Chief Executive's at 125% of his base salary (2016: 100% of base salary). The Committee believes that the Chief Financial Officer has made a strong start within the organisation and to recognise this development considered it appropriate to increase his variable remuneration.

Performance in 2016

As described in the Strategic Report, the Company's end-markets remained subdued in 2016. However, the delivery of self-help and restructuring measures benefited margins across the Group, further details of which can be found in the Chief Executive's Strategic Review and in the Operational Reviews on pages 12 to 18 and 36 to 49, respectively.

In 2016, Annual Incentive awards for the Executive Directors were based 80% on Group headline EPS, with an adjustment for working capital, and 20% on personal objectives. Our headline EPS of 28.3p matched target, but the Company did not meet the threshold working capital target so the financial payout element was reduced by 10%. This results in awards of 44.6% and 35.6% of base salary for François Wanecq and Guy Young, respectively, in respect of the financial performance metrics. In addition, we assessed each Executive Director's completion of the personal objectives they were set for 2016, awarding Mr Wanecq and Mr Young, 18.25% and 15.50% of their maximum entitlements of 25% and 20%, respectively. As a result, the overall Annual Incentive payable to Mr Wanecq for 2016 is 63% of base salary and Mr Young, 51% of base salary, against target payouts of 62.5% and 50%, respectively, and maximum bonus opportunities of 125% and 100%, respectively.

The performance period for the awards made under the Vesuvius Share Plan in 2014 matured at the end of December 2016. Performance was measured equally by reference to TSR relative to the FTSE 250 (excluding Investment Trusts) and headline EPS growth above compound annual GDP growth over the three-year period. Relative TSR performance was below median and therefore the TSR target was not met. The EPS growth target over the three-year period was also not met. Therefore, these awards lapse in their entirety.

Shareholders' Views

The Committee noted that 40,836,586 votes (17.14%) were cast against the advisory resolution on the 2015 Remuneration Report at the 2016 AGM, which predominantly reflected the votes of one significant shareholder. During the year, Directors had discussed remuneration and other matters with this shareholder and noted their views, which principally relate to concerns with the use of TSR and EPS as performance metrics under the Vesuvius Share Plan. After deliberation, the Committee remains satisfied that preserving the existing criteria for the VSP in the Remuneration Policy being proposed for approval at the 2017 AGM continues to promote the long-term success of the Company, and that the performance-related elements of remuneration are transparent, stretching and rigorously applied.

I remain keen to hear shareholders' views on remuneration matters – including comments on any elements of our 2017 Remuneration Policy – and look forward to an ongoing dialogue with shareholders and their continued support for our Directors' Remuneration Report resolution at the AGM.

Yours sincerely

Jane Hinkley Chairman, Remuneration Committee
2 March 2017

Directors' Remuneration Report

Remuneration Policy

It is proposed that this policy will take effect from the close of the 2017 AGM. The previous policy will apply in its entirety up until this date and after this date those elements of the previous policy that relate to remuneration that remain extant on this date (such as outstanding share awards) will continue to apply until these commitments cease.

The Remuneration Committee reserves the right to make any remuneration payments and payments for loss of office (including exercising any discretions available to it in connection with such payments), notwithstanding that they are not in line with the policy set out here, where the terms of the payment were agreed; (i) before the date the Company's first Remuneration Policy approved by shareholders in accordance with section 439A of the Companies Act came into effect; (ii) before the policy set out here came into effect, provided that the terms of the payment were consistent with the shareholder-approved Remuneration Policy in force at the time they were agreed; or (iii) at a time when the relevant individual was not a Director of the Company and, in the opinion of the Remuneration Committee, the payment was not in consideration for the individual becoming a Director of the Company. For these purposes, 'payments' includes the Remuneration Committee satisfying awards of variable remuneration and, in relation to an award over shares, the terms of the payment are 'agreed' at the time the award is granted.

Remuneration Policy Table for Executive Directors

Base salary

Alignment/purpose
Helps to recruit and retain key employees. Reflects the individual's experience, role and contribution within the Company.

Operation
The individual's performance is reviewed annually, with changes to base salary normally appraised over a two to three-year period.

Any change will normally be effective from 1 January in the year of the increase.

Base salary is positioned to be market competitive when considered against other global industrial companies, and relevant international and FTSE 250 companies (excluding Investment Trusts).

Paid in cash, subject to local tax and social security regulations.

Opportunity
Salary increases will normally be in line with the average increase awarded to other employees in the Group over a similar period. In considering any increase in base salary, the Committee will also consider: (i) the role and value of the individual; (ii) changes in job scope or responsibility; (iii) progression in the role (e.g. for a new appointee); (iv) a significant increase in the scale of role and/or size, value or complexity of the Group; and (v) the need to maintain market competitiveness.

In line with the two to three-year period for base salary appraisal, individual increases when paid are likely to be in excess of those for the wider population of employees for that year.

No absolute maximum has been set for Executive Director base salaries. Current Executive Directors' salaries are set out in the Annual Report on Directors' Remuneration section of this Remuneration Report.

Performance
Any increase will take into account the individual's performance, contribution and increasing experience.

Other benefits

Alignment/purpose
Provides normal market practice benefits.

Operation
A range of standard benefits including, but not limited to: car allowance, private medical care (including spouse and dependent children), life insurance, disability and health insurance, together with relocation allowance and expatriate benefits, in some instances grossed up for tax, in accordance with the Group's policies, and participation in any employee share scheme operated by the Group.

Opportunity
There is no formal maximum as benefit costs can fluctuate depending on changes in provider, cost and individual circumstances.

Performance
None

Pension

Alignment/purpose
Helps to recruit and retain key employees. Ensures income in retirement.

Operation
An allowance is given as a percentage of base salary. This may be used to participate in Vesuvius' pension arrangements, invested in own pension arrangements or taken as a cash supplement (or any combination of the above options).

Opportunity
Maximum of 30% of base salary.

Performance
None

Remuneration Policy *continued*

Annual Incentive

Alignment/purpose
Incentivises Executive Directors to achieve key short-term financial and strategic targets of the Group.

Additional alignment with shareholders' interests through the operation of bonus deferral.

Operation
Normally 33% of any Annual Incentive earned by Executive Directors will be deferred into awards over shares under the Vesuvius Deferred Share Bonus Plan which normally vest after at least three years, other than in specified circumstances outlined elsewhere in this Policy. These may be cash or share settled.

The Committee has the discretion to determine that actual incentive payments should be lower than levels calculated by reference to achievement against targets if it considers this to be appropriate.

The Committee has the discretion to award participants the equivalent value of dividends accrued during the vesting period on any shares that vest.

Subject to malus and clawback.

Opportunity
Below threshold: 0%.

On-target: 62.5% of base salary.

Maximum: 125% of base salary.

Payments made between threshold and on-target and between on-target and maximum are pro-rated.

Performance

Annual Incentive is measured on targets set at the beginning of each year. The Committee establishes threshold and maximum performance targets for each financial year. The majority of the Annual Incentive will be determined by measure(s) of Group financial performance. The remainder of the Annual Incentive will be based on financial, strategic or operational measures appropriate to the individual Director. Performance is measured over a one-year period. Actual performance targets will be disclosed after the performance period has ended. They are not disclosed in advance due to their commercial sensitivity.

Vesuvius Share Plan

Alignment/purpose
Flexible 'umbrella' plan.

Aligns Executive Directors' interests with those of shareholders through the delivery of shares. Rewards Executive Directors for achieving the strategic objectives of growth in shareholder value and earnings.

Assists retention of Executive Directors over a three-year performance period.

Operation
Awards may be granted as:

> Performance share awards

> Deferred share bonus awards

> Restricted share awards

> Market-price options

These may be cash or share settled.

Individuals are entitled to an aggregate annual maximum amount of awards. If more than one type of award is granted, the individual limit for all awards is reduced to remain within the maximum.

Awards vest three years after their award date, other than in specified circumstances outlined elsewhere in this policy, subject to the achievement of specified conditions.

The Committee may decide that the shares in respect of which an award vests are delivered to participants at that point or that awards will then be subject to an additional holding period before participants are entitled to receive their shares.

The Committee has the discretion to award participants the equivalent value of dividends accrued during the vesting period on any shares that vest.

Subject to malus and clawback.

Opportunity
Executive Directors are eligible to receive an annual award with a face value of up to 200% of base salary in Performance share awards.

Vesting at threshold performance is 25% rising to vesting of the full award at maximum.

Performance
Vesting of Performance Share awards is usually dependent on measures of Group EPS and relative TSR with the precise measures and weighting of the measures determined by the Committee ahead of each award. These details are disclosed in the Annual Report on Directors' Remuneration section of this Remuneration Report.

The Company reserves the right only to disclose EPS performance targets after the performance period has ended, due to their commercial sensitivity.

Prior to any vesting, the Remuneration Committee also reviews the underlying financial performance of the Company over the performance period to ensure the vesting is justified.

Malus/Clawback Arrangements

The Executive Directors' variable remuneration is subject to malus and clawback provisions. These provide the Committee with the flexibility, if required, to withhold or recover payments made to Executive Directors under the Annual Incentive Plan (including deferred awards) and/or to withhold or recover share awards granted to Executive Directors under the Vesuvius Share Plan, including any dividends granted on such awards. The circumstances in which the Committee could potentially elect to apply malus and clawback provisions include: a material misstatement in the Company's financial statements; an error in the calculation of the extent of payment or vesting of an incentive; gross misconduct by an individual; or significant financial loss or serious reputational damage to Vesuvius plc resulting from an individual's conduct, a material failure of risk management or a serious breach of health and safety. These malus and clawback provisions apply for a period of up to three years after the end of a performance period (or end of the deferral period in respect of deferred awards).

Performance Measures

In selecting performance measures for the Annual Incentive, the Committee seeks to reflect key strategic aims and the need for a rigorous focus on financial performance. Each year the Committee agrees challenging targets to ensure that underperformance is not rewarded. The Company will not be disclosing the specific financial or personal objectives set until after the relevant performance period has ended because of commercial sensitivities. The personal objectives are all non-financial or job-specific in nature and track performance against key strategic, organisational and operational goals.

In selecting performance measures for the Vesuvius Share Plan, the Committee seeks to focus Executive Directors on the execution of long-term strategy and also align their rewards with value created for shareholders. On this basis, the performance conditions for the Vesuvius Performance Share awards will usually be dependent on measures based on TSR and EPS performance.

Within the policy period, the Committee will continually review the performance measures used, including TSR and the applicable comparator group, and EPS and other financial measures, to ensure that awards are made on the basis of challenging targets that clearly support the achievement of the Group's strategic aims.

The Committee may vary or waive any performance condition(s) if circumstances occur which cause it to determine that the original condition(s) have ceased to be appropriate, provided that any such variation or waiver is fair, reasonable and not materially less difficult to satisfy than the original condition (in its opinion). In the event that the Committee were to make an adjustment of this sort, a full explanation would be provided in the next Remuneration Report.

The Committee may: (a) in the event of a variation of the Company's share capital, demerger, special dividend or any other corporate event which it reasonably determines justifies such an adjustment, adjust; and (b) amend the terms of awards granted under the share schemes referred to above in accordance with the rules of the relevant plans.

Share awards may be settled by the issue of new shares or by the transfer of existing shares. In line with prevailing best practice at the time this Policy Report is approved, any issuance of new shares is limited to 5% of share capital over a rolling ten-year period in relation to discretionary employee share schemes and 10% of share capital over a rolling ten-year period in relation to all employee share schemes.

Remuneration Policy
continued

Illustration of the Application of the Remuneration Policy for 2017

The charts below show the total remuneration for Executive Directors for 2017 for minimum, on-target and maximum performance. The fixed elements of remuneration comprise base salary, pension and other benefits, using 2017 salary data. The assumptions on which they are calculated are as follows:

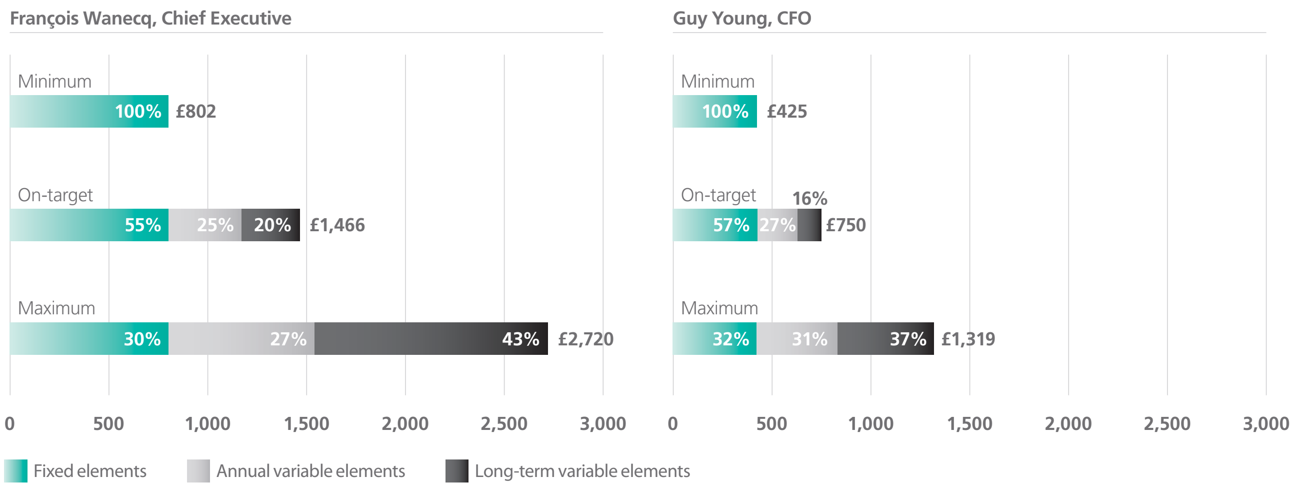
Minimum: Fixed remuneration only.

On-target: Fixed remuneration plus on-target Annual Incentive (made at 62.5% of base salary for François Wanecq and Guy Young) and threshold vesting (i.e. median performance for TSR and threshold for EPS) for Performance Share awards (made at 200% of base salary for François Wanecq and 150% of base salary for Guy Young) under the Vesuvius Share Plan.

Maximum: Fixed remuneration plus maximum Annual Incentive (being full achievement of financial and personal targets, made at 125% of base salary for François Wanecq and Guy Young) and 100% vesting for Performance Share awards (made at 200% of base salary for François Wanecq and 150% of base salary for Guy Young) under the Vesuvius Share Plan.

Note: In addition the Committee retains the discretion to award dividends (either shares or their cash equivalent) on any shares that vest.

Remuneration Illustrations £000



Service Contracts of Executive Directors

The Committee will periodically review the contractual terms for new Executive Directors to ensure these reflect best practice. Service contracts currently operate on a rolling basis and are limited to a 12-month notice period.

François Wanecq is employed as Chief Executive of Vesuvius plc pursuant to the terms of a service agreement made with Cookson Group plc dated 17 October 2012, which was assigned to Vesuvius plc upon completion of the demerger on 19 December 2012. Guy Young is employed as Chief Financial Officer pursuant to the terms of a service agreement with Vesuvius plc dated 16 September 2015. Each Executive Director's appointment is terminable by Vesuvius on not less than 12 months' written notice, and by each Executive Director on not less than six months' written notice.

External Appointments of Executive Directors

The Executive Directors do not currently serve as Non-executive Directors of any other quoted company. Subject always to consent being granted by the Company for them to take up such an appointment, were they to so serve, the Company would allow them to retain any fees they received for the performance of their duties.

Remuneration Policy for Non-executive Directors

The Company seeks to appoint Non-executive Directors who have relevant professional knowledge, and have gained experience in a relevant industry and geographical sector, to support diversity of expertise at the Board and match the wide geographical spread of the Company's activities.

Non-executive Directors attend Board, Committee and other meetings, held mainly in the UK, together with an annual strategy review to debate the Company's strategic direction. All Non-executive Directors are expected to familiarise themselves with the scale and scope of the Company's business and to maintain their specific technical skills and knowledge.

The Board sets the level of fees paid to the Non-executive Directors after considering the role and responsibilities of each Director and the practice of other companies of a similar size and international complexity. The Non-executive Directors do not participate in Board discussions on their own remuneration. No variable remuneration is available to Non-executive Directors. Non-executive Directors receive reimbursement of reasonable expenses incurred in attending the Board, Committee and other ad hoc meetings, including gross up payments to cover any personal tax owed on such expenses.

Fees

Alignment/purpose
To attract and retain Non-executive Directors of the necessary skill and experience by offering market-competitive fees.

Operation
Fees are usually reviewed every other year by the Board.

Non-executive Directors are paid a base fee for the performance of their role, payable in cash, plus additional fees for Committee chairmanship or acting as the Senior Independent Director.

The Chairman is paid a single fee and receives administrative support from the Company.

Opportunity
Non-executive Directors and the Chairman will be paid market-appropriate fees, with any increase reflecting changes in the market or adjustments to a specific Non-executive Director's role.

No eligibility for bonuses, retirement benefits or to participate in the Group's employee share plans.

Base fees paid to Non-executive Directors will in aggregate remain within the aggregate limit stated in our Articles, currently being £500,000.

Performance
None

Benefits and expenses

Alignment/purpose
To facilitate execution of responsibilities and duties required by the role.

Operation
All Non-executive Directors are reimbursed for reasonable expenses incurred in carrying out their duties (including any personal tax owing on such expenses).

Opportunity
Non-executive Directors' expenses are paid in accordance with Vesuvius' expense procedures.

Performance
None

Terms of Service of the Chairman and other Non-executive Directors

The terms of service of the Chairman and the Non-executive Directors are contained in letters of appointment. Each Non-executive Director is appointed subject to their election at the Company's first Annual General Meeting following their appointment and re-election at subsequent Annual General Meetings. During the first year of his/her appointment, the Chairman is entitled to 12 months' notice from the Company; thereafter, he/she is entitled to six months' notice from the Company. None of the other Non-executive Directors is entitled to receive compensation for loss of office at any time. All Non-executive Directors are subject to retirement, and election or re-election, in accordance with the Company's Articles of Association. The current policy is for Non-executive Directors to serve on the Board for a maximum of nine years, with review at the end of three and six years, subject always to mutual agreement and annual performance evaluation. The Board retains discretion to extend the tenure of Non-executive Directors beyond this time, subject to the requirements of Board balance and independence being satisfied.

Remuneration Policy
continued

The table below shows the date of appointment for each of the Non-executive Directors:

Non-executive Director	Date of appointment
John McDonough CBE	31 October 2012
Christer Gardell	31 October 2012
Hock Goh	2 April 2015
Jane Hinkley	3 December 2012
Douglas Hurt	2 April 2015

Recruitment Policy

On appointment or promotion of a new Executive Director, the Committee will typically use the Remuneration Policy in force at the time of the Committee's decision to determine ongoing remuneration.

Base salary levels will generally be set in accordance with the Remuneration Policy current at the time of the Committee's decision, taking into account the experience and calibre of the appointee. If it is appropriate to appoint an individual on a base salary initially below what is adjudged to be market positioning, contingent on individual performance, the Committee retains the discretion to realign base salary over the one to three years following appointment, which may result in a higher rate of annualised increase than might otherwise be awarded under the policy. If the Committee intends to rely on this discretion, it will be noted in the first Remuneration Report following an individual's appointment. Other than in exceptional circumstances, other elements of annual remuneration will, typically, be set in line with the Remuneration Policy including a limit on awards under the Annual Incentive and Vesuvius Share Plan of 325% of salary in aggregate. The Committee retains the discretion to make the following further exceptions:

> In the event that an internal appointment is made, or where a Director is appointed as a result of transfer into the Group on an acquisition of another Company, the Committee may continue with existing remuneration provisions for this individual, including pension entitlements, where appropriate
> If necessary and appropriate to secure the appointment of a candidate who has to move locations as a result of the appointment, whether internal or external, the Committee may make additional payments linked to relocation, above those outlined in the policy table, and would authorise the payment of a relocation allowance and repatriation, as well as other associated international mobility terms. Such benefits would be set at a level which the Committee considers appropriate for the role and the individual's circumstances
> If appropriate the Committee may apply different performance measures and/or targets to a Director's first incentive awards in his/her year of appointment

Service contracts will be entered into on terms similar to those for the existing Executive Directors, summarised in the 'Service contracts of Executive Directors' section above.

In addition to the annual remuneration elements noted above, the Committee may consider buying out terms, incentives and any other compensation arrangements forfeited on leaving a previous employer that an individual forfeits in accepting an appointment with Vesuvius. The Committee will have the authority to rely on Listing Rule 9.4.2R(2) or to apply the existing limits within the Vesuvius Share Plan to make Restricted Share awards on recruitment. In making any such awards, the Committee will review the terms of any forfeited awards, including, but not limited to, vesting periods, the expected value of such awards on vesting and the likelihood of the performance targets applicable to such awards being met, while retaining the discretion to make any buy-out award the Committee determines is necessary and appropriate. The Committee may also require the appointee to purchase shares in Vesuvius to a pre-agreed level prior to vesting of any such awards. The value of any buy-out award will be capped, to ensure its maximum value is no higher than the value of the awards that the individual forfeited on joining Vesuvius. Any such awards will be subject to malus and clawback.

With respect to the appointment of a new Chairman or Non-executive Director, appointment terms will be consistent with those applicable at the time the appointment is agreed. Variable pay will not be considered. With respect to Non-executive Directors, fees will be consistent with the policy at the time the appointment is agreed. If, in exceptional circumstances, a Non-executive Director was asked to assume an interim executive role, the Company retains the discretion to pay them appropriate executive compensation, in line with the policy.

Exit Payment Policy

Vesuvius has the option to make a payment in lieu of part or all of the required notice period for Executive Directors. Any such payment in lieu will consist of the base salary, pension contributions and value of benefits to which the Director would have been entitled for the duration of the remaining notice period, net of statutory deductions in each case. Half of any payments in lieu of notice would be made in a lump sum, the remainder in equal monthly instalments commencing in the month in which the midpoint of their foregone notice period falls (and are reduced or extinguished by salary from any role undertaken by the departing Executive in this time). Executive Directors are subject to certain non-compete covenants for a period of nine months, and non-solicitation covenants for a period of 12 months, following the termination of their employment. Their service agreements are governed by English law.

Executive Directors' contracts do not contain any change of control provisions; they do contain a duty to mitigate should the Director find an alternative paid occupation in any period during which the Company must otherwise pay compensation on early termination.

The table below summarises how the awards under the annual bonus and Vesuvius Share Plan are typically treated in different leaver scenarios and on a change of control. Whilst the Committee retains overall discretion on determining 'good leaver' status, it typically defines a 'good leaver' in circumstances such as retirement with agreement of the Company, ill health, disability, death, redundancy, or part of the business in which the individual is employed or engaged ceasing to be part of the Group. Final treatment is subject to the Committee's discretion.

Event	Timing	Calculation of vesting/payment
Annual Incentive Plan		
Good leaver	Paid at the same time as to continuing employees.	Annual bonus is paid only to the extent that any performance conditions have been satisfied and is pro rated for the proportion of the financial year worked before cessation of employment.
Bad leaver	Not applicable	Individuals lose the right to their annual bonus.
Change of control	Paid on the effective date of change of control.	Annual bonus is paid only to the extent that any performance conditions have been satisfied and is pro rated for the proportion of the financial year worked.
Vesuvius Share Plan		
Good leaver	On normal vesting date (or earlier at the Committee's discretion).	Unvested awards vest to the extent that any performance conditions have been satisfied and a pro rata reduction applies to the value of the awards to take into account the proportion of vesting period not served, unless the Committee decides that the reduction in the number of vested shares is inappropriate
Bad leaver	Unvested awards lapse.	Unvested awards lapse on cessation of employment.
Change of control[1]	On the date of the event.	Unvested awards vest to the extent that any performance conditions have been satisfied and a pro rata reduction applies for the proportion of the vesting period not served.

Note:
1. In certain circumstances, the Committee may determine that unvested awards under the Vesuvius Share Plan will not vest on a change of control but will instead be replaced by an equivalent grant of a new award, as determined by the Committee, in the new company.

In the case of the Vesuvius Deferred Share Bonus Plan if the individual leaves for any reason (other than dismissal for cause) or in the event of a change in control, the deferred award will vest in full, unless the Committee determines otherwise.

Remuneration Policy
continued

Benefits normally cease to be provided on the date employment ends. However, the Committee has the discretion to allow some minor benefits (such as health insurance, tax advice and repatriation expenses) to continue to be provided for a period following cessation where this is considered fair and reasonable or appropriate on the basis of local market practice. In addition, the Committee retains discretion to fund other expenses for the Executive Director, for example, payments to meet legal fees incurred in connection with termination of employment, or to meet the costs of providing outplacement support, and de minimis termination costs up to £5,000 to cover transfer of mobile phone or other administrative expenses.

The Committee reserves the right to make any other payments in connection with a Director's cessation of office or employment where the payments are made in good faith in discharge of an existing legal obligation (or by way of damages for breach of such an obligation) or by way of a compromise or settlement of any claim arising in connection with the cessation of a Director's office or employment.

In certain circumstances, the Committee may approve new contractual arrangements with departing Executive Directors including (but not limited to) settlement, confidentiality, restrictive covenants and/or consultancy arrangements. These would be used only where the Committee believed it was in the best interests of the Company to do so.

Comparison of Remuneration Policy for Executive Directors with that for other Employees

The Remuneration Policy for Executive Directors is designed in line with the remuneration philosophy set out in this report – which also underpins remuneration for the wider Group. Remuneration arrangements for Executive Directors draw on the same elements as those for other employees – base salary, fixed benefits and retirement benefits – with performance-related pay extending down into the management cadres and beyond. However, given that remuneration structures for other employees need to reflect both seniority and local market practice, they differ from the policy for Executive Directors. In particular, Executive Directors receive a higher proportion of their remuneration in performance-related pay and share-based payments. Individual percentages of fixed versus variable remuneration and participation in share-based structures decline as seniority decreases.

The process for delivering salary increases on a two to three-year cycle for Executive Directors is also applied to other members of the Group Executive Committee and their direct managerial reports. Whilst all employees receive an annual performance appraisal, other employees continue to receive salary reviews on an annual basis.

As with Executive Directors, middle and senior managers participate in the Annual Incentive Plan. For members of the Group Executive Committee and functional employees, the award is predominantly based on Group performance, with the remainder awarded against achievement of personal objectives. For operational employees, any potential award is based upon achieving three measures relating to Group performance, business unit performance, and individual achievement of personal objectives.

All members of the Group Executive Committee participate in the Vesuvius Share Plan and receive awards of Performance Shares, which vest in accordance with measures and targets set against EPS and TSR. The level of awards payable to members of the Group Executive Committee who don't serve on the Board are lower than those payable to the Executive Directors.

For certain senior and middle managers, awards are made under the Vesuvius Medium Term Plan ('MTP'). These managers participate in the MTP at varying percentage levels, and awards are based on the same measures and targets as the Annual Incentive Plan. Senior managers have their MTP awards made over Vesuvius shares, whilst middle managers receive their awards in cash. In each case, awards are granted following the end of the relevant financial year. The MTP share awards vest on the second anniversary of the date of grant, subject to continuing employment.

Considerations of Conditions Elsewhere in the Group in Developing Policy

The Company does not consult directly with employees on Executive Directors' remuneration arrangements. However, the Remuneration Committee will take into account the pay and employment conditions of other Group employees when determining Executive Directors' remuneration, particularly when determining base salary increases, when the Committee will consider the salary increases for other Group employees in the same jurisdiction.

Consideration of Shareholder Views

Vesuvius is committed to open and transparent dialogue with its shareholders on remuneration as well as other governance matters. As Chairman of the Committee, Jane Hinkley welcomes shareholder engagement and is available for any discussions investors wish to have on remuneration matters. During 2016, remuneration matters were discussed at a number of meetings with investors. The feedback from such meetings is always shared with the Committee and taken into consideration when decisions are made about future remuneration strategy and arrangements.

Shareholding Guidelines

The Remuneration Committee encourages Executive Directors to build and hold a shareholding in the Company. The required holding of the Chief Executive is to be equivalent in value to at least 2x salary and that required of other Executive Directors is to be equivalent in value to at least 1x salary.

Compliance with the shareholding policy is tested at the end of each year for application in the following year using the average of the closing prices of a Vesuvius ordinary share for the trading days in that December.

General

The Committee may make minor amendments to the policy set out in this Policy Report (for regulatory, exchange control, tax or administrative purposes or to take account of a change in legislation) without obtaining shareholder approval for that amendment.

Explanation of Changes Made to the Remuneration Policy

Changes in the interpretation and operation of the Remuneration Policy after it was approved by shareholders at the 2014 AGM were described in the 2014 and 2015 Annual Reports; however, to comply with the regulatory requirement to include in notes accompanying the future policy table, details of which components of the Remuneration Policy have been changed or added since the last approved Remuneration Policy, these explanations are also repeated in this section of the 2016 Annual Report:

1. In 2015, in order to provide enhanced long-term alignment with shareholders, the Committee increased the required shareholding to be built up and held by the Chief Executive from 100% to 200% of base salary.
2. In addition, the Committee reviewed the clawback arrangements set out in the Remuneration Policy approved at the AGM in 2014 and, in light of revisions to the UK Corporate Governance Code, further strengthened Vesuvius' application of this Policy as follows:
   > Malus provisions were added to the existing clawback provisions. This provides the Committee with the flexibility, if required, also to withhold payments made to Executive Directors under the Annual Incentive Plan and/or to withhold share awards granted to Executive Directors under the Vesuvius Share Plan.

   > The circumstances in which the Committee could potentially elect to apply malus and clawback provisions were extended. Potential events which could trigger the application of these provisions now encompass a misstatement in the Company's financial statements which requires restatement of a prior year's accounts; an error in the calculation of the extent of payment or vesting of an incentive; gross misconduct by an individual; or significant financial loss or serious reputational damage to Vesuvius plc resulting from an individual's conduct, a material failure of risk management or a serious breach of health and safety.

   This year the Company is required to table a new Remuneration Policy for shareholder approval at the forthcoming AGM. This will be the second triennial vote on the Remuneration Policy since that requirement was introduced. Having undertaken a comprehensive review of the prevailing arrangements, the Committee concluded that the existing combination of base salary, an Annual Incentive and a Long-Term Incentive awarding Performance Shares, remained the most suitable mechanism for compensating Executive Directors. Consequently, the new Policy does not differ materially from the existing policy. In order to increase alignment between our shareholders and Executive Directors, the Committee has introduced a requirement for a proportion of the Annual Incentive (normally 33%) to be deferred into shares for a pre-defined period (normally three years). A number of editorial changes have been made to the text of the old policy, to refine and improve the explanation of various items, but the only other change of significant note is an amendment to align the bonus opportunity for all Executive Directors to 62.5% of base salary for on-target performance and 125% at maximum. The previous policy differentiated between the Chief Executive and the other Executive Directors.

Directors' Remuneration Report

Annual Report on Directors' Remuneration

Remuneration Committee Structure

The current members of the Remuneration Committee are all the independent Non-executive Directors of the Company. Jane Hinkley (who also serves as the Committee Chairman), Hock Goh and Douglas Hurt served on the Committee throughout 2016 and in 2017 to date. Nelda Connors served on the Committee until her retirement from the Board on 30 September 2016. The Committee complies with the obligations of the UK Corporate Governance Code for the composition of remuneration committees. Each of the members brings a broad experience of international businesses and an understanding of their challenges to the work of the Committee. The Company Secretary is Secretary to the Committee. Members' biographies are on pages 22 and 23.

Meetings

The Committee met four times during the year with full attendance at each meeting. The Group Chairman, Chief Executive, and Vice President Human Resources were invited to each meeting, together with Christer Gardell, our non-independent Non-executive Director, though none of them participated in discussions regarding their own remuneration. In addition, a representative from Deloitte, the Remuneration Committee adviser, attended each meeting and the Chief Financial Officer attended where the agenda of the Committee required it. This attendance supported the work of the Committee, giving critical insight into the operational demands of the business and their application to the overall strategy of remuneration within the Group. In receiving views on remuneration matters from the Executive Directors and senior management, the Committee recognised the potential for conflicts of interest to arise and considered the advice accordingly. The Chairman of the Committee reported the outcomes of all meetings to the Board.

The Committee operates under formal terms of reference which were reviewed during the year. The terms of reference are available on the Group website www.vesuvius.com. The Committee members are also empowered to obtain outside legal advice at the cost of the Company in relation to their deliberations. These powers were not exercised during the year. The Committee may also secure the attendance at its meetings of any employee or other parties it considers necessary.

Role and Responsibilities

The Committee is responsible for:

> Setting the appropriate remuneration for the Chairman, the Executive Directors and the Company Secretary
> Recommending and monitoring the level and structure of remuneration for senior management, being the first layer of management below Board level and their direct reports
> Overseeing the operation of the executive share incentive plans

Advice Provided to the Remuneration Committee

Deloitte is appointed directly by the Remuneration Committee to provide advice on executive remuneration matters, including remuneration structure and policy, updates on market practice and trends, and guidance on the implementation and operation of long-term incentive plans. The Committee appointed Deloitte following the conduct of a formal tender process in 2014. Deloitte is a signatory to the Remuneration Consultants Group Code of Conduct in relation to Executive Remuneration Consulting in the UK. Deloitte also provides the Remuneration Committee with ongoing calculations of total shareholder return to enable the Committee to be updated on the performance of long-term share incentive plans. In addition in 2016, within the wider Group, Deloitte was procured locally to provide limited accounting and tax advisory work. During 2016, Deloitte's fees for advice to the Remuneration Committee, charged on a time spent basis, amounted to £55,585. The Committee conducted a review of the performance of Deloitte as Remuneration Adviser during the year and concluded that it is satisfied that the advice provided to it on executive remuneration matters is effective, objective and independent, noting that Deloitte brings significant technical depth to the deliberations of the Committee. No conflict of interest arises as a result of other services provided by Deloitte to the Group.

Activities of the Remuneration Committee

The key matters the Remuneration Committee considered during its four meetings in 2016 included:

> The salary review proposals for the Executive Directors and Company Secretary, and an overview of the proposals for senior management
> Reviewing achievement against performance targets for the 2015 annual cash bonus incentive arrangements
> Setting performance targets and approving the structure of the 2016 annual cash bonus incentive arrangements
> Considering the Company's attainment of performance conditions applicable to the Vesuvius Performance Share awards made in 2013
> Setting the performance conditions and authorising the grant of new awards in 2016 under the Vesuvius Share Plan and Medium Term Incentive Plan
> In the light of advice received from the external advisers regarding trends in remuneration practice and governance, and feedback from institutional shareholders, discussing the Company's overall approach to executive remuneration and reviewing whether any changes should be made

- Considering, formulating and approving the 2017 Remuneration Policy
- Reviewing the specific performance conditions of the 2017 annual incentive arrangement which will now include a target for cash flow performance
- Reviewing the Remuneration Committee's terms of reference
- Approving the 2015 Directors' Remuneration Report and reviewing the 2016 Directors' Remuneration Report

As in previous years, the Committee was the subject of an externally moderated performance evaluation. The management of the Committee, and its processes and support, were again rated highly, as was the level of engagement and effectiveness of the relationship with Deloitte as external adviser. It was felt that the Committee would benefit from gaining greater insight into the remuneration arrangements for employees below the management tier and it was agreed that this would be an area of focus in 2017.

Regulatory Compliance

The Remuneration Policy set out on pages 81 to 89 was prepared in accordance with the Companies Act 2006 and The Large and Medium-sized Companies and Groups (Accounts and Reports) (Amendment) Regulations 2013. It also meets the requirements of the UK Listing Authority's Listing Rules and the Disclosure and Transparency Rules. This Remuneration Report sets out how the provisions of the September 2014 UK Corporate Governance Code are applied by the Company in relation to matters of remuneration. We have complied for the year under review with these provisions.

Share Usage

Under the rules of the Vesuvius Share Plan, the Company has the discretion to satisfy awards either by the transfer of Treasury shares or other existing shares, or by the allotment of newly issued shares. Awards made under the Deferred Share Bonus Plan, to satisfy shares awarded to Directors under the annual incentive, and awards made to senior managers by the Company over shares pursuant to the Medium Term Incentive Plan, must be satisfied out of shares held for this purpose by the Company's employee share ownership plan trust ('ESOP'). The decision on how to satisfy awards is taken by the Remuneration Committee which considers the most prudent and appropriate sourcing arrangement for the Company.

At 31 December 2016 the Company held 7,271,174 ordinary shares in Treasury and 1,081,752 Vesuvius shares were held in the ESOP. The Trustee of the ESOP can be gifted Treasury shares by the Company, can purchase shares in the open market or can subscribe for newly issued shares, as required, to meet obligations for the provision of shares to satisfy options and awards that vest.

The Vesuvius Share Plan complies with the current Investment Association guidelines on headroom which provide that overall dilution under all plans should not exceed 10% over a ten-year period in relation to the Company's issued share capital, with a further limitation of 5% in any ten-year period on discretionary schemes. More than 9.9% of the 10% limit and more than 4.9% of the 5% limit is available as headroom for the Company. No Treasury shares have been transferred or newly issued shares allotted under the Vesuvius Share Plan during the year under review.

Policy Implementation

The following section provides details of how the Company's Remuneration Policy was implemented during the financial year 2016 and how it will be implemented in the financial year 2017.

Directors' Remuneration – audited

The table below sets out the total remuneration received by Executive Directors in the financial year under review:

	François Wanecq		Guy Young[1]	
	2016 (£000)	2015 (£000)	**2016 (£000)**	2015 (£000)
Total salary[2]	**590**	550	**325**	54
Taxable benefits[3]	**35**	37	**19**	3
Pension[4]	**177**	165	**81**	14
Total fixed pay[5]	**802**	752	**425**	71
Annual bonus[6]	**371**	–	**166**	–
Long-term incentives[7]	**–**	–	**–**	58
Total variable pay[8]	**371**	–	**166**	58
Total[9]	**1,173**	752	**591**	129

Annual Report on Directors' Remuneration *continued*

The table below sets out the fees and taxable benefits received by Non-executive Directors in the financial year under review and the total remuneration received by both Executive and Non-executive Directors during the year under review:

	2016			2015		
	Total fees[2] (£000)	Taxable benefits[3] (£000)	Total (£000)	Total fees[2] (£000)	Taxable benefits[3] (£000)	Total (£000)
John McDonough CBE	185	21	206	185	12	197
Nelda Connors[10]	34	8	42	45	5	50
Christer Gardell	45	14	59	45	10	55
Hock Goh[11]	45	8	53	34	1	35
Jane Hinkley	60	4	64	60	2	62
Douglas Hurt[12]	65	2	67	46	1	47
Total 2016 Non-executive Director remuneration			**491**			
Total 2016 Executive Director remuneration			**1,764**			
Total 2016 Director remuneration			**2,255**			

Notes:
1. Guy Young joined the Board on 1 November 2015.
2. Base salary (or fees, as appropriate) earned during the financial year.
3. Benefits for Executive Directors comprise car allowance, private medical care and tax advice and a de minimis amount for Directors' spouses' travel. The UK regulations require the inclusion of benefits for Directors where these would be taxable in the UK on the assumption that the Director is tax resident in the UK. The figures in the table therefore include expense reimbursement and associated tax relating to travel, accommodation and subsistence in connection with attendance at Board meetings and other Board business during the year, which are considered by HMRC to be taxable in the UK.
4. François Wanecq receives a pension allowance of 30% of base salary and Guy Young receives a pension allowance of 25% of base salary. The figures in the table represent the value of all cash allowances and contributions received in respect of pension benefits.
5. The sum of base salary, benefits and pension.
6. This figure includes any annual cash bonus incentive payments made to the Executive Directors for their performance in the year under review. See page 93 for more details.
7. This figure would include the value of any share award made to the Executive Directors under the Vesuvius Share Plan that is due to vest following the completion of the performance period in the year under review. Neither the 2013 or 2014 Performance Share awards made to Mr Wanecq achieved the requisite performance conditions necessary to vest. The figure shown for Mr Young has been updated to show the actual value on the date of grant of the Restricted Share award he received on joining Vesuvius, and includes a cash payment of £952 made to him to reflect the dividends that would have accrued on the shares between his date of joining and the grant date. See pages 96 for more details.
8. The sum of annual bonus, any applicable Restricted Share award and the value of long-term incentives where the performance period ended during the financial year.
9. The sum of base salary, benefits, pension, annual bonus, any applicable Restricted Share award and long-term incentives where the performance period ended during the financial year.
10. Nelda Connors retired from the Board on 30 September 2016.
11 Hock Goh joined the Board on 2 April 2015.
12. Douglas Hurt joined the Board on 2 April 2015.

Additional note:
13. Total 2015 Director remuneration for the Directors who served during 2015 was £1.701m.

Payments to Past Directors – audited

There were no payments made to a past Director of the Company during the year ended 31 December 2016.

Loss of Office Payments – audited

There were no payments made to any Director for loss of office during the year ended 31 December 2016.

Base Salary and Fees

In the year under review, the Chief Executive received a base salary of £590,000 per annum and the Chief Financial Officer received a base salary of £325,000 per annum. Non-executive Directors' fees were set at £45,000 per annum. Supplementary fees of £15,000 per annum were paid to the Chairmen of the Audit and Remuneration Committees, respectively. A supplementary annual fee of £5,000 was also paid to the Senior Independent Director. The Chairman was paid an annual fee of £185,000. Neither the Chairman nor the other Non-executive Directors are members of the Group's pension plans, nor do they participate in the Group's incentive schemes.

As reported in our 2015 Remuneration Report, François Wanecq's base salary was reviewed in late 2015 in line with the Group's longer-term approach of reviewing the salaries of Executive Directors and senior executives every two to three years. This was the first time his base salary had been reviewed since demerger and, following this review, it was resolved that his salary in 2016 should be increased by 7.2%, up to £590,000 per annum, in recognition of his leadership of the Group over the three years since demerger and the tough trading environment being experienced. In considering this increase, the Committee also took into account the fact that over the past three years the salary increase for the UK salaried employee workforce had been 7.6%. There was no change to Guy Young's base salary in 2016. There are no changes to either of the Executive Directors' salaries in 2017.

Pension Arrangements – audited

In accordance with his service agreement, François Wanecq is entitled to a pension allowance of 30% of base salary. Guy Young is entitled to a pension allowance of 25% of base salary. This amount can be used to participate in Vesuvius' pension arrangements, be invested in their own pension arrangements or be taken as a cash supplement (or any combination of these alternatives).

Annual Bonus

The Executive Directors are eligible to receive an annual incentive calculated as a percentage of base salary, based on achievement against specified targets. Each year the Remuneration Committee establishes the financial performance criteria for the forthcoming year. These criteria are set by reference to the Company's financial budget. The target range is set to ensure that maximum bonuses are paid only for significantly exceeding performance expectations. The Remuneration Committee considers that the setting and attainment of these targets is important in the context of achievement of the Company's longer-term strategic goals.

The annual incentive has a threshold level of performance below which no award is paid, a target level and a maximum performance level at which a maximum award is earned. For 2016 François Wanecq's maximum annual incentive potential was 125% of base salary and his target annual incentive potential was 62.5% of base salary. Guy Young's maximum annual incentive potential was 100% of base salary and his target annual incentive potential was 50% of base salary.

For the financial year 2016, 80% of the Executive Directors' annual incentives were based on a financial target: Vesuvius' Group headline earnings per share, with an adjustment based on Vesuvius' working capital performance to focus greater attention on cash flow; and 20% on the achievement of personal objectives.

Financial targets
The effect of the working capital kicker was to reduce the level of pay-out that could be achieved by up to 10% if specified working capital targets were not attained. This 'kicker' could also increase the level of pay-out by up to 10%, but not above the stated plan maximum. The 2016 Vesuvius Group headline earnings per share performance targets set out below were set at the December 2015 full year average foreign exchange rates, being the rates used for the 2016 budget process:

Threshold: 23.1 pence	**On target:** 28.3 pence	**Maximum:** 30.0 pence

In order to achieve the working capital target, the Group's working capital as a percentage of sales had to be between 24.5% to 25.5% of sales.

In assessing the Group's performance against these targets, the Committee uses a constant currency approach. Thus, the 2016 full year EPS performance was retranslated at December 2015 full year average foreign exchange rates to establish performance. This is consistent with practice in previous years.

In 2016 Vesuvius' retranslated EPS performance was 28.3 pence, and working capital was 26.6%. Consequently EPS performance was on target, but the working capital target was not met. Payments of 44.6% and 35.6% of base salary were therefore due under the Annual Incentive Plan to François Wanecq and Guy Young, respectively, in respect of the financial performance metrics.

Personal objectives
In 2016, for the first time, a proportion (20%) of the Annual Incentive for Executive Directors was based on the achievement of personal objectives. A summary of the objectives set and performance achieved is set out below

Chief Executive

Summary of objective	Summary outcome
Implementation of Board approved strategy	> Implementation of programmes to focus growth in China, including sales progression and production improvements > Maintaining growth momentum in India with strong sales and improved trading margin. R&D centre created.
Timely implementation of agreed restructuring plans	> Achievement of cash savings ahead of budget > Many actions delivered ahead of schedule
Succession planning for executive and senior management roles	> Good progress made in operational management > Adoption by Board of personal development programme for high potential individuals
Corporate activity	> Completed acquisition of mould flux business of Carboox > Good progress on other projects

Annual Report on Directors' Remuneration *continued*

In summary, after considering performance as outlined above, the Committee approved an Annual Incentive award of 18.25% of base salary in respect of the personal objectives for François Wanecq.

Finance Director

Summary of objective	Summary outcome
People and Team	> New capability assessment process embedded and cascaded > Effective transition as Finance Director from the perspective of his direct team
Update IT strategy and progress implementation	> Updated IT strategy was approved in 2016 > IT Governance structure updated
Improve Group cash management	> Strong cash conversion (in the context of ongoing challenges in certain key markets)
Provide outline for a more efficient back office	> Feasibility study for project approved > Proposals for design presented
Conduct effective/efficient external audit tender	> Fully achieved in line with objectives

In summary, after considering performance as outlined above, the Committee, approved an Annual Incentive award of 15.50% of base salary in respect of the personal objectives for Guy Young.

2017 Annual Incentive

The Remuneration Committee has determined that for 2017 the structure of the annual incentive should be amended to strengthen the alignment of this incentive with the Group's strategic objectives. For 2017, 60% of François Wanecq and Guy Young's annual incentives will therefore be based on Group headline earnings per share, 20% on the Group's cash conversion ratio (defined as operating cash flow divided by trading profit) and 20% on the achievement of personal objectives. The working capital kicker utilised in previous years has been removed. The Committee believes that the substitution of cash conversion for the "cash kicker" will ensure a clearer focus on cash generation and management on a standalone basis. The Company will not be disclosing the targets set until after the relevant performance period has ended because of commercial sensitivities. The personal objectives for 2017 are all non-financial or job-specific in nature and track performance against key strategic, organisational and operational goals. François Wanecq and Guy Young's maximum annual incentive bonus potential for 2017 will be 125% of base salary. In addition, as required in our new Remuneration Policy, 33% of any Annual Incentive earned will be deferred into awards over shares for three years. This further aligns our remuneration arrangements with investors.

Malus/Clawback Arrangements in 2017

Vesuvius has malus and clawback arrangements in respect of Executive Directors' variable remuneration. The structure of those arrangements is outlined in our Remuneration Policy.

Longer-term Pay – Audited

Performance Share awards are allocated to the Executive Directors under the Vesuvius Share Plan. In accordance with the Remuneration Policy and the rules of the VSP, they are eligible to receive, on an annual basis, a Performance Share award with a face value of up to 200% of salary. Vesting of 50% of shares awarded is based upon the Company's three-year TSR performance relative to that of the constituent companies of the FTSE 250 (excluding Investment Trusts), and 50% on headline EPS growth. The level of compound headline EPS growth specified in the targets is set by the Remuneration Committee each year, taking into account the Group's prospects and the broader global economic environment. The two measures operate independently. The use of these performance measures is intended to align executive remuneration with shareholders' interests.

Targets for the 2014 and 2015 Performance Share Awards – Audited

Vesuvius Share Plan – performance targets

TSR ranking relative to FTSE 250 excluding Investment Trusts	Vesting percentage
Below median	0%
Median	12.50%
Between median and upper quintile	Pro rata between 12.50% and 50%
Upper quintile	50%

Annual compound headline EPS growth above global GDP	Vesting percentage
Below 3%	0%
3%	12.50%
Between 3% and 15%	Pro rata between 12.50% and 50%
At or above 15%	50%

Targets for the 2016 and 2017 Performance Share Awards – Audited

The Remuneration Committee has determined that François Wanecq will receive a Performance Share award in 2017 equivalent in value to 200% of his base salary and Guy Young an award equivalent in value to 150% of his base salary. In February 2016, the Committee reviewed the performance conditions proposed for the award of Performance Shares in 2016 and resolved to simplify and amend the EPS performance measure by removing the reference to global GDP. Removing the reference to global GDP ensures that the arrangements are simplified and are more understandable for all participants. The same approach is to be used in 2017. The Committee has set a schedule of EPS targets that is designed at the maximum to be highly challenging, whilst remaining an effective incentive for the management team.

Vesuvius Share Plan – performance targets

TSR ranking relative to FTSE 250 excluding Investment Trusts	Vesting percentage
Below median	0%
Median	12.50%
Between median and upper quintile	Pro rata between 12.50% and 50%
Upper quintile	50%

Annual compound headline EPS growth	Vesting percentage
Below 3%	0%
3%	12.50%
Between 3% and 6%	Pro rata between 12.50% and 25%
6%	25%
Between 6% and 15%	Pro rata between 25% and 50%
At or above 15%	50%

Vesuvius Performance Share Award Allocations – Audited

The performance period applicable to the awards made in 2014 ended on 31 December 2016. The TSR performance during this three-year performance period was assessed against the comparator group and it was determined that the Company's performance was below median. As a result, no Performance Share awards will vest under the TSR performance element. There will also be no Performance Share awards that vest under the EPS performance element of the performance condition as the annual compound headline EPS growth above GDP for the period was -1.9%. The applicable Performance Share award will therefore lapse on the third anniversary of the grant.

The following table sets out those Performance Share awards that were allocated in 2013, 2014, 2015 and 2016 under the Vesuvius Share Plan:

Grant and type of award	Total share allocations as at 31 Dec 2015	Additional shares allocated during the year	Allocation lapsed during the year	Shares vested during the year	**Total share allocation 31 Dec 2016**	Market price of the shares on the day before award (p)	Performance period	Earliest vesting date
François Wanecq								
22 April 2013[1]							1 Jan 13 – 31 Dec 15	
Performance Shares	341,509	–	341,509	–	**–**	322.1		22 Apr 2016
17 March 2014[2]							1 Jan 14 – 31 Dec 16	
Performance Shares	253,748	–	–	–	**253,748**	429.3		17 Mar 2017
1 April 2015[3]							1 Jan 15 – 31 Dec 17	
Performance Shares	221,533		–	–	**221,533**	491.1		1 Apr 2018
8 April 2016[4]							1 Jan 16 – 31 Dec 18	
Performance Shares	–	373,938	–	–	**373,938**	291.7		8 Apr 2019
Total	816,790	373,938	341,509	–	**849,219**			
Guy Young								
8 April 2016[4]							1 Jan 16 – 31 Dec 18	
Performance Shares	–	128,739	–	–	**128,739**	291.7		8 Apr 2019
Total	–	128,739	–	–	**128,739**			

Annual Report on Directors' Remuneration
continued

Notes:
1. The Performance Shares that were allocated in 2013 had performance conditions to be tested over the financial years 2013, 2014 and 2015. As the requisite performance was not achieved, François Wanecq's award lapsed on the third anniversary of grant in April 2016.
2. In 2014 François Wanecq received a maximum allocation of Performance Shares worth two times his base salary, being 253,748 shares. These Performance Shares had performance conditions to be tested over the financial years 2014, 2015 and 2016. They will lapse on the third anniversary of grant in March 2017.
3. In 2015 François Wanecq received a maximum allocation of Performance Shares worth two times his base salary, being 221,533 shares.
4. In 2016 François Wanecq and Guy Young received allocations of Performance Shares worth 2 times and 1.25 times their base salaries, respectively, being 373,938 shares and 128,739 shares respectively. These allocations were calculated based upon the average closing mid-market price of Vesuvius' shares on the five dealing days before the award was made, being £3.1556. The total value of these awards based on this share price on the date of grant was therefore £1,179,999 and £406,249 respectively.

Additional notes:
5. All these awards have been made in the form of nil cost options with no exercise price.
6. If the performance conditions for these awards are not met then these awards will lapse. If the threshold level of either of the two performance conditions applicable to these awards is met, then 12.50% of the award will vest.
7. The Remuneration Committee also has the discretion to award cash or shares equivalent in value to the dividend that would have accrued during the vesting period on any awards that vest.
8. The mid-market closing price of Vesuvius' shares ranged between 270.6p and 402.2p during 2016 and on 30 December 2016, the last dealing day of the year, was 395.3p.

Restricted Share Award

On Guy Young's appointment as Chief Financial Officer, the Committee resolved, in compliance with the Group's Remuneration Policy on recruitment, that it would partially compensate him for the long-term incentives awarded by his previous employer that he forfeited as a result of joining Vesuvius. The Committee resolved that Guy Young would receive a one-off Restricted Share award under the Vesuvius Share Plan over Vesuvius plc shares to a maximum value of £150,000 with the number of shares under the Restricted Share award being calculated with reference to the closing market price on 2 November 2015 (the first trading day after Guy Young began employment at Vesuvius) which was £3.659. Shortly after his appointment, Guy Young received a proportion of his long-term incentives from his former employer and thus, in line with the agreement made at the time of his appointment, his Restricted Share award was automatically reduced pro rata for this receipt to an amount of £62,625. Based on the above share price this amounted to a Restricted Share award over 17,115 shares.

Half of this award vested on 13 May 2016, the remainder will vest on the second anniversary of the date of his commencement of employment. In order to be consistent with the terms of the forfeited long-term awards, vesting of this remaining Restricted Share award will be subject to him remaining employed by the Company and not being under notice of termination on the vesting date above. It is not subject to any further performance condition. Details of the portion of the Restricted Share award that remained outstanding as at 31 December 2016 are given in the table below:

Date of award	Shares allocated during the year	Shares vested during the year[1]	**Total share allocation 31 Dec 2016**	Market price of the shares on the day before award (p)	Earliest vesting date of outstanding award
13 May 2016	17,115	8,558	**8,557**	336.6	1 Nov 2017

Notes:
1. 8,558 shares vested to Guy Young on 13 May 2016. The mid-market closing price of the Company's shares on the date of vesting was £3.337. The total value of shares that he received on the date of vesting was therefore £28,558. In addition Guy Young received a cash payment of £952 to reflect the dividends that would have accrued on the shares between his date of joining and the vesting date.

Statement of Directors' Shareholdings – Audited

The interests of Directors and their closely associated persons in ordinary shares as at 31 December 2016, including any interests in share options and shares provisionally awarded under the Vesuvius Share Plan are set out below:

	Beneficial holding	Outstanding incentive awards[1]
Executive Directors		
François Wanecq	1,338,909	849,219
Guy Young	4,527	137,296
Non-executive Directors		
John McDonough CBE (Chairman)	100,000	–
Christer Gardell[2]	–	–
Hock Goh	5,000	–
Jane Hinkley	12,000	–
Douglas Hurt	18,000	–

Note:
1. François Wanecq holds 849,219 and Guy Young holds 128,739 nil cost options granted as Performance Shares under the Vesuvius Share Plan. These are all subject to performance conditions. In addition, Guy Young holds an allocation of 8,557 shares under his Restricted Share award which will vest subject to him remaining employed by the Company and not being under notice of termination on the vesting date. They are not subject to any further performance conditions.
2. Christer Gardell is Managing Partner of, and has a financial interest in, Cevian Capital which held 21.11% of Vesuvius' issued share capital as at 31 December 2016 and at the date of this report.

Additional notes:
3. None of the other Directors, nor their spouses, nor their minor children, held non-beneficial interests in the ordinary shares of the Company during the year.
4. There were no changes in the interests of the Directors in the ordinary shares of the Company in the period from 1 January 2017 to 2 March 2017.
5. All awards under the Vesuvius Share Plan are subject to performance conditions and continued employment until the relevant vesting date as set out on pages 94 and 95.
6. Full details of Directors' shareholdings and incentive awards are given in the Company's Register of Directors' Interests, which is open to inspection at the Company's registered office during business hours.

Shareholding Guidelines

The Remuneration Committee encourages Executive Directors to build and hold a shareholding in the Company. The required holding of the Chief Executive is to be equivalent in value to at least 2x salary and that required of other Executive Directors is to be equivalent in value to at least 1x salary. To this end, Executive Directors are required, not just encouraged, to retain at least 50% (measured as the value after tax) of any shares received through the operation of share schemes; in addition, permission to sell shares held – whether acquired through the operation of share schemes or otherwise – will not be given, other than in exceptional circumstances, if, following the disposal, the shareholding policy is not still met.

Compliance with the shareholding policy is tested at the end of each year for application in the following year using the average of the closing prices of a Vesuvius ordinary share for the trading days in that December.

Executive Directors' Shareholdings – Audited

As at 31 December 2016, the Executive Directors' shareholdings against the current shareholding guidelines (using the Company's share price averaged over the trading days of the period 1 December to 31 December 2016, of 397.77p) were as follows:

Director	Actual share ownership as a percentage of salary at 31 Dec 2016	Policy share ownership as a percentage of salary	Policy met?
François Wanecq	903%	200%	Yes
Guy Young	6%	100%	Yes (in the build-up period)

Annual Changes in Chief Executive Pay vs. Employee Pay

The table below shows the percentage change in the remuneration of the Chief Executive – comprising salary, taxable benefits and annual bonus – and comparable data of UK salaried employees. The UK salaried employee workforce was chosen as a fair representation of a suitable comparator group as François Wanecq, the Chief Executive, is based in the UK (albeit with a global role and responsibilities) and levels of pay vary widely across the Group depending on geography and local market conditions. François Wanecq's salary was increased by 7.2% in 2016. This was the first time it had been increased since the demerger in 2012. In considering this increase the Committee also took into account the fact that over the past three years the salary increase for the UK salaried employee workforce had been 7.6%.

	Chief Executive			UK salaried employee workforce (average per capita)
	2016 (£000)	2015 (£000)	% change	% change
Salary	**590**	550	7	3.27
Taxable benefits	**35**	37	(6)	4.49
Annual bonus	**371**	0	100	369[1]

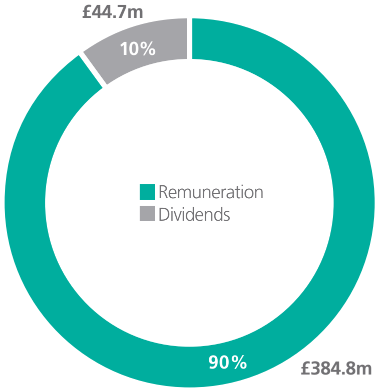
Note:
1. There was no payout to the Executive Directors and Corporate staff under the financial element of the annual bonus plans in 2015. The percentage increase shown therefore reflects the anticipated payouts for 2016.

Annual Report on Directors' Remuneration *continued*

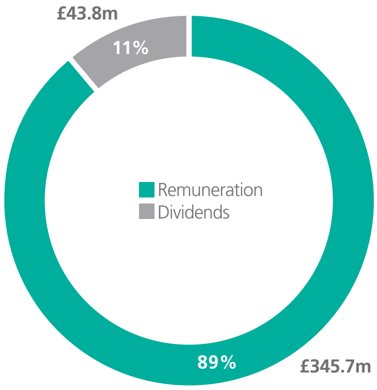
Annual Spend on Employee Pay vs. Shareholders Distributions

The charts below show the annual spend on all employees (including Executive Directors) compared with distributions made and proposed to be made to shareholders for 2015 and 2016:

Relative importance of spend on pay (2016) £m



Relative importance of spend on pay (2015) £m

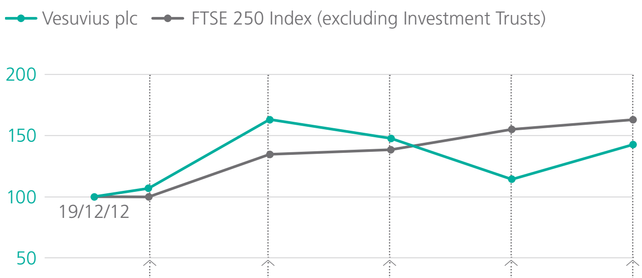


	(£m) 2016	(£m) 2015	Change
Group remuneration of continuing operations (see Note 8)	**384.8**	345.7	11.31%
Dividends (based on final proposed dividend)	**44.7**	43.8	2.1%

TSR Performance and Chief Executive Pay

The TSR performance graph compares Vesuvius TSR performance with that of the same investment in the FTSE 250 Index (excluding Investment Trusts). This index has been chosen as the comparator index to reflect the size, international scope and diversity of the Company. TSR is the measure of the returns that a company has provided for its shareholders, reflecting share price movements and assuming reinvestment of dividends. A spot rate has been used for this graph. The demerger of Vesuvius plc was effective on 19 December 2012 and therefore the graph shows the period from 19 December 2012 to 31 December 2016.

TSR performance graph



Chief Executive pay – financial year ending	31/12/12	31/12/13	31/12/14	31/12/15	**31/12/16**
Total remuneration (single figure (£000))	£1,227	£2,447	£1,519	£752	**£1,173**
Annual variable pay (% of maximum)	0%	100%	64%	0%	**63%**
Long-term variable pay (% of maximum)	67%	28%	27%	0%	**0%**

Statement on Shareholder Voting

At the last AGM (which was held on 12 May 2016) the resolution concerning the advisory vote on the Remuneration Report for 2015 received 197,395,591 votes (82.86%) in favour and 40,836,586 votes against (17.14%); 1,133,645 votes were withheld. At the AGM to be held on 10 May 2017, shareholders will again be invited to participate in an advisory vote on the Remuneration Report.

The Remuneration Policy will next be put to a vote at this year's AGM, as that is three years on from 2014, when the policy was approved with 215,577,683 votes (98%) in favour and 4,684,029 votes (2%) against; 213,747 votes were withheld.

The Directors' Remuneration Report has been approved by the Board and is signed on its behalf by

Jane Hinkley Chairman, Remuneration Committee
2 March 2017

Directors' Report

Directors' Report

The Directors submit their Annual Report together with the audited accounts of the Group and of the Company, Vesuvius plc, registered in England and Wales No. 8217766, for the year ended 31 December 2016.

The Companies Act 2006 requires the Company to provide a Directors' Report for Vesuvius plc for the year ended 31 December 2016. The information that fulfils this requirement and which is incorporated by reference into, and forms part of, this report is included in the following sections of the Annual Report:

> the 'Our Responsibility' section
> the 'Governance' section
> Financial Instruments: the information on financial risk management objectives and policies contained in Notes 20 and 27 to the Consolidated Financial Statements

This Directors' Report and the Strategic Report contained in pages 2 to 59 together represent the management report for the purpose of compliance with DTR 4.1.8R of the UK Listing Authority's Disclosure and Transparency Rules. The Company does not have any overseas branches within the meaning of the Companies Act 2006.

Going Concern

Information on the business environment in which the Group operates, including the factors that are likely to impact the future prospects of the Group, is included in the Strategic Report. The principal risks and uncertainties that the Group faces throughout its global operations are shown on pages 20 and 21. The financial position of the Group, its cash flows, liquidity position and debt facilities are also described in the Strategic Report. In addition, the Group's Viability Statement is set out within the Strategic Report on pages 19 and 20. Notes 20 and 27 to the Consolidated Financial Statements set out the Group's objectives, policies and processes for managing its capital; financial risks; financial instruments and hedging activities; and its exposures to credit, market (both currency and interest rate related) and liquidity risk. Further details of the Group's cash balances and borrowings are included in Notes 13, 14 and 27 to the Consolidated Financial Statements.

The Directors have prepared cash flow forecasts for the Group for a period in excess of 12 months from the date of approval of the 2016 financial statements. These forecasts reflect an assessment of current and future end-market conditions and their impact on the Group's future trading performance. The forecasts show that the Group will be able to operate within the current committed debt facilities and show continued compliance with the Company's financial covenants. On the basis of the exercise described above and the Group's available committed debt facilities, the Directors consider that the Group and Company have adequate resources to continue in operational existence for a period of 12 months from the date of signing of these accounts. Accordingly, they continue to adopt a going concern basis in preparing the financial statements of the Group and the Company.

Research and Development

The Group's investment in research and development ('R&D') during the year under review amounted to £28.6m (representing approx. 2.0% of Group revenue (2015: 2.0%). Further details of the Group's R&D activities can be found in the Innovation section of the Strategic Report.

Dividends

An interim dividend of 5.15 pence (2015: 5.15 pence) per Vesuvius ordinary share was paid on 23 September 2016 to Vesuvius shareholders. The Board is recommending a final dividend in respect of 2016 of 11.40 pence (2015: 11.125 pence) per ordinary share which, if approved, will be paid on 19 May 2017 to shareholders on the register at 7 April 2017.

Accountability and Audit

A responsibility statement of the Directors and a statement by the auditor about its reporting responsibilities can be found on pages 103 and 106 to 108 respectively. The Directors fulfil the responsibilities set out in their statement within the context of an overall control environment of central strategic direction and delegated operating responsibility. As at the date of this report, so far as each Director of the Company is aware, there is no relevant audit information of which the Company's auditor is unaware and each Director hereby confirms that they have taken all the steps that they ought to have taken as a Director in order to make themselves aware of any relevant audit information and to establish that the Company's auditor is aware of that information.

Auditor Appointment

A competitive tender process for the appointment of a statutory auditor was conducted during 2016. Following the completion of this the Company is recommending that PricewaterhouseCoopers LLP be appointed as external auditor for Vesuvius plc for the year ending 31 December 2017, replacing KPMG LLP. KPMG LLP has audited the Group's accounts for the year ending 31 December 2016. Shareholder approval to confirm the appointment of PricewaterhouseCoopers LLP and to authorise the Directors to determine its remuneration will be sought at the AGM.

Directors

The Directors of the Company are Christer Gardell, Hock Goh, Jane Hinkley, Douglas Hurt, John McDonough CBE, François Wanecq and Guy Young. Nelda Connors retired as a Director of the Company during the year. All the Directors will retire at the AGM and offer themselves for re-election at the AGM. Biographical information for the current Directors is given on pages 22 and 23. Further information on the remuneration of, and contractual arrangements for, the current Executive and Non-executive Directors is given on pages 90 to 98 in the Directors' Remuneration Report. The Non-executive Directors do not have service agreements.

Directors' Report
continued

Directors' Indemnities

The Directors have been granted Qualifying Third Party Indemnity Provisions by the Company and the Directors of the Group's UK Pension Plan Trustee Board (none of whom is a Director of Vesuvius plc) have been granted Qualifying Pension Scheme Indemnity Provisions by Vesuvius Pension Plans Trustees Ltd. The indemnities for Directors of Vesuvius plc have been in force since the date of their appointment. The Pension Trustee indemnities were in force throughout the last financial year and remain in force.

Annual General Meeting

The Annual General Meeting of the Company will be held at The Lincoln Centre, 18 Lincoln's Inn Fields, London WC2A 3ED on Wednesday 10 May 2017 at 11.00 am.

Amendment of Articles of Association

The Company may make amendments to the Articles by way of special resolution in accordance with the Companies Act.

Greenhouse Gas Emissions

Information on our reporting of greenhouse gas emissions, and the methodology used to record these, is set out on page 56 of the Strategic Report.

Donations

In accordance with Company policy, no political donations were made in 2016 (2015: nil).

Change of Control Provisions

The terms of the Group's committed bank facility and US Private Placement Loan Notes contain provisions entitling the counterparties to exercise termination or other rights in the event of a change of control on takeover of the Company. A number of the arrangements to which the Company and its subsidiaries are party, such as other debt arrangements and share incentive plans, may also alter or terminate on a change of control in the event of a takeover. In the context of the Group as a whole, these other arrangements are not considered to be significant.

Share Capital

As at the date of this report, the Company had an issued share capital of 278,485,071 ordinary shares of 10 pence each; 7,271,174 of these ordinary shares are held in Treasury. Therefore, the total number of Vesuvius plc shares with voting rights is 271,213,897.

Further information relating to the Company's issued share capital can be found in Note 7 to the Company financial statements.

The Company's Articles specify that, subject to the authorisation of an appropriate resolution passed at a General Meeting of the Company, Directors can allot relevant securities under Section 551 of the Companies Act up to the aggregate nominal amount specified by the relevant resolution. In addition, the Articles state that the Directors can seek the authority of shareholders in a General Meeting to allot equity securities for cash, without first being required to offer such shares to existing ordinary shareholders in proportion to their existing holdings under Section 561 of the Companies Act, in connection with a rights issue and in other circumstances up to the aggregate nominal amount specified by the relevant resolution.

At the Annual General Meeting on 12 May 2016, the Directors were authorised to issue relevant securities up to an aggregate nominal amount of £18,080,926 and empowered to allot equity securities for cash on a non pre-emptive basis up to an aggregate nominal amount of £2,712,138 in accordance with the terms of the Pre-Emption Group's Statement of Principles, at any time up to the earlier of the date of the 2017 Annual General Meeting or 30 June 2017. The Directors propose to renew these authorities at the 2017 Annual General Meeting for a further year. In the year ahead, other than in respect of Vesuvius' ability to satisfy rights granted to employees under its various share-based incentive arrangements, the Directors have no present intention of issuing any share capital of Vesuvius plc.

Authority for Purchase of Own Shares

Subject to the provisions of company law and any other applicable regulations, the Company may purchase its own shares. At the Annual General Meeting of the Company held on 12 May 2016 Vesuvius shareholders gave authority to the Company to make market purchases of up to 27,121,389 Vesuvius ordinary shares, representing 10% of the Company's issued ordinary share capital as at the latest practicable day prior to the publication of the Notice of AGM. This authority expires on 30 June 2017 or the date of the AGM to be held in 2017, whichever is the earlier. The Directors will seek renewal of this authority at the forthcoming AGM.

In 2013 the Company acquired 7,271,174 ordinary shares, representing a nominal value of £727,117 and 2.6% of the entire called-up share capital of the Company prior to the purchase. These shares were purchased pursuant to the Board's commitment to return the majority of the net proceeds of the disposal of the Precious Metals Processing division to shareholders. These shares are currently held as Treasury shares. The Company has not subsequently disposed of any of the repurchased shares. During the year, the Company did not make any further acquisitions of shares, any acquisitions by nominee, nor did it dispose of any shares previously acquired. The Company does not have a lien over any of its shares.

Share Plans

Vesuvius operates a number of share-based incentive plans. For the majority of these plans the Group can satisfy entitlements by the acquisition of existing shares, the transfer of Treasury shares or by the issue of new shares. Existing shares are held in an employee share ownership trust ('ESOP'). The Trustee of the ESOP purchases shares in the open market as required to enable the Group to meet liabilities for the issue of shares to satisfy awards that vest. The Trustee does not register votes in respect of these shares and has waived the right to receive any dividends.

Restrictions on Transfer of Shares and Voting

The Company's Articles of Association ('Articles') do not contain any specific restrictions on the size of a holding or on the transfer of shares. The Directors are not aware of any agreements between holders of the Company's shares that may result in restrictions on the transfer of securities or voting rights.

No person has any special rights with regard to the control of the Company's share capital and all issued shares are fully paid. This is a summary only and the relevant provisions of the Articles should be consulted if further information is required.

Interests in the Company's Shares

The Company has been notified in accordance with DTR 5 of the Disclosure and Transparency Rules of the following interests of 3%, or more, of its issued ordinary shares:

	As at 31 Dec 2016	As at 2 Mar 2017
Cevian Capital	21.11	21.11
Franklin Templeton	9.92	9.92
Artisan Partners	11.74	9.57
Deutsche Bank	8.11	8.92
Aberforth Partners	5.11	5.11
Pelham Capital Management CfD	5.91	4.58
Phoenix Asset Management	3.10	3.10

The interests of Directors and their connected persons in the ordinary shares of the Company as disclosed in accordance with the Listing Rules of the UK Listing Authority are as set out on page 96 of the Directors' Remuneration Report and details of the Directors' long-term incentive awards are set out on pages 95 and 96.

Equal Opportunities Employment

Vesuvius plc is an equal opportunities employer and decisions on recruitment, development, training and promotion and other employment-related issues are made solely on the grounds of individual ability, achievement, expertise and conduct. These principles are operated on a non-discriminatory basis, without regard to race, colour, nationality, culture, ethnic origin, religion, belief, gender, sexual orientation, age, disability or any other reason not related to job performance or prohibited by applicable law. In cases where employees are injured or disabled during employment with the Group, support, including appropriate training, is provided to those employees and workplace adjustments are made as appropriate in respect of their duties and working environment, supporting recovery and continued employment.

Employee Communications

Vesuvius adopts an open and honest approach to employee communications, supported by regular updates from senior management across all businesses and operations within the Group. Regular communications include email updates on the financial performance of the Company and the industry environment in which Vesuvius operates, an employee intranet which distributes Company news and events, as well as local initiatives for employee engagement on a site-by-site basis. The HR department is the primary point of contact for employees on employment and workplace matters, operating with an open door policy and advising employees of any local legal, tax, pension or other employment changes. There are numerous employee sponsored and led representative bodies within Vesuvius which differ with respect to jurisdiction and geography. Senior management, supported and facilitated by the HR department, encourages open dialogue and seeks opportunities to consult with employee representative bodies as appropriate.

Pensions

In each country in which the Group operates, the pension arrangements in place are considered to be consistent with good employment practice in that particular area. Independent advisers are used to ensure that the plans are operated in accordance with local legislation and the rules of each plan. Group policy prohibits direct investment of pension fund assets in the Company's shares. Outside the UK, the US, Germany and Belgium, the majority of pension plans in the Group are of a defined contribution nature. In 2016 the main German defined benefit plan was closed for new entrants and existing members were offered a buy-out of their benefits under this plan. Those who accepted this buy-out then joined the new defined contribution plan.

The Group's UK defined benefits plan (the 'UK Plan') and the main US defined benefits plans are closed to new entrants and have ceased providing future benefits accrual, with all eligible employees instead being provided with benefits through defined contribution arrangements.

For the Group's closed UK Plan, a Trustee Board exists comprising employees, former employees and an independent trustee. The Board currently comprises six trustee Directors, of whom two are member-nominated. The administration of the UK Plan is outsourced. The Company is mindful of its obligations under the Pensions Act 2004 and of the need to comply with the guidance issued by the Pensions Regulator. Regular dialogue is maintained between the Company and the Trustee Board of the UK Plan to ensure that both Company and Trustee Board are apprised of the same financial and other information about the Group and the UK Plan. This is pertinent to each being able to contribute to the effective functioning of the UK Plan.

Directors' Report
continued

Although the latest full valuation of the UK Plan showed a funding surplus, the Company has agreed to continue to make voluntary contributions of £2.0m per annum to further improve the funding position of the UK Plan and to assist with future de-risking actions.

The Group's worldwide net pension deficit at 31 December 2016 was £29.4m (31 December 2015: £35.3m). The principal reasons for the £5.9m reduction in the net deficit were the change in financial assumptions, significantly, the decrease in discount rates across the UK, US and Germany, which increased pension liabilities by £87.4m, more than offset by actuarial gains on plan assets of £93.2m, principally in the UK. Further details of pension arrangements are given in Note 28 to the Consolidated Financial Statements.

The following disclosures are made in compliance with the Financial Conduct Authority's Listing Rule 9.8.4C R:

Disclosure requirement under LR 9.8.4 R	Reference/Location
(1) Interest capitalised by the Group during the year	See Note 9.1 on page 121
(2) Publication of unaudited financial information	Not applicable
(4) Details of any long-term incentive schemes	Pages 82 and 83
(5) Director waiver of emoluments	Not applicable
(6) Director waiver of future emoluments	Not applicable
(7) Allotment for cash of equity securities made during the year	Not applicable
(8) Allotment for cash of equity securities made by a major unlisted subsidiary during the year	Not applicable
(9) Details of participation of parent undertaking in any placing made during the year	Not applicable
(10) Details of relevant contracts in which a Director or controlling shareholder was interested during the year	Not applicable
(11) Contracts for the provision of services by a controlling shareholder during the year	Not applicable
(12) Details of any arrangement under which a shareholder has waived or agreed to waive any dividends	Vesuvius plc holds 7,271,174 of its £0.10 ordinary shares as Treasury shares. No dividends are payable on these shares. Cookson Investments (Jersey) Limited, the Trustee of the Company's ESOP, has agreed to waive, on an ongoing basis, any dividends payable on shares it holds on trust for use under the Company's Employee Share Plans, details of which can be found on pages 91 and 100
(13) Details of where a shareholder has agreed to waive future dividends	See above
(14) Statements relating to controlling shareholders and ensuring company independence	Not applicable

The Directors' Report has been approved by the Board and is signed on its behalf by

Henry Knowles Company Secretary
2 March 2017

Statement of Directors' Responsibilities in respect of the Annual Report and Financial Statements

The Directors of Vesuvius plc are responsible for preparing the Annual Report and the Group and parent company (the 'Company') financial statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare Group and Company financial statements for each financial year. Under that law they are required to prepare the Group financial statements in accordance with IFRSs as adopted by the European Union and applicable law and have elected to prepare the Company financial statements in accordance with UK Accounting Standards, including FRS 101 Reduced Disclosure Framework.

Under company law the Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and Company and of their profit or loss for that period. In preparing each of the Group and Company financial statements, the Directors are required to:

> Select suitable accounting policies and then apply them consistently
> Make judgements and estimates that are reasonable and prudent
> For the Group financial statements, state whether they have been prepared in accordance with IFRSs as adopted by the European Union
> For the Company financial statements, state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the Company financial statements
> Prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Group and the Company will continue in business

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Company's transactions and disclose with reasonable accuracy at any time the financial position of the Company and enable them to ensure that its financial statements comply with the Companies Act 2006. They have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities.

Under applicable law and regulations, the Directors are also responsible for preparing a Strategic Report, Directors' Report, Directors' Remuneration Report and Corporate Governance Report that comply with that law and those regulations.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the Company's website. Legislation in the UK governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Responsibility Statement of the Directors in respect of the Annual Financial Report

Each of the Directors confirms that to the best of their knowledge:

> The financial statements, prepared in accordance with the applicable set of accounting standards, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Company and the undertakings included in the consolidation taken as a whole
> The Directors' Report and Strategic Report include a fair review of the development and performance of the business and the position of the Company and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face

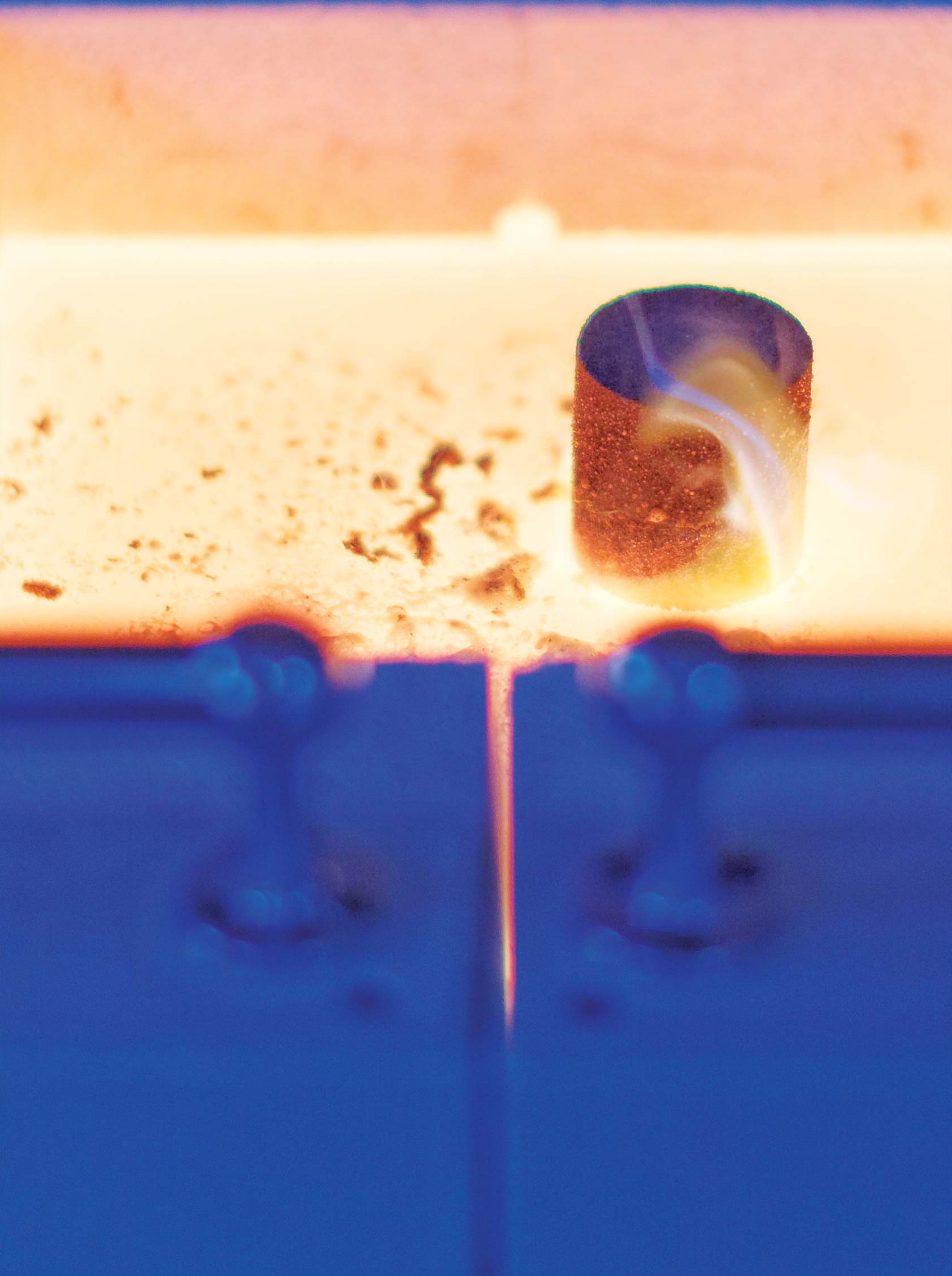
In addition, the Directors consider that the Annual Report, taken as a whole, is fair, balanced and understandable and provides the information necessary for shareholders to assess the Group's position and performance, business model and strategy.

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

John McDonough CBE	Chairman
François Wanecq	Chief Executive
Guy Young	Chief Financial Officer
Christer Gardell	Non-executive Director
Hock Goh	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

On behalf of the Board

Guy Young Chief Financial Officer
2 March 2017



Section Five

Financial Statements

In this section

Independent Auditor's Report

To the Members of Vesuvius plc Only

Opinions and conclusions arising from our audit

1 Our opinion on the financial statements is unmodified
We have audited the financial statements of Vesuvius plc for the year ended 31 December 2016 which comprise the group income statement, the group statement of comprehensive income, the group statement of cash flows, the group and company balance sheets, the group statement of changes in equity, and the related notes. In our opinion:

> the financial statements give a true and fair view of the state of the group's and of the parent company's affairs as at 31 December 2016 and of the group's profit for the year then ended;

> the group financial statements have been properly prepared in accordance with International Financial Reporting Standards as adopted by the European Union;

> the parent company financial statements have been properly prepared in accordance with UK Accounting Standards, including FRS 101 Reduced Disclosure Framework; and

> the financial statements have been prepared in accordance with the requirements of the Companies Act 2006; and, as regards the group financial statements, Article 4 of the IAS Regulation.

2 Our assessment of risks of material misstatement
In arriving at our audit opinion above on the financial statements the risks of material misstatement that had the greatest effect on our audit, in decreasing order of audit significance, were as follows (unchanged from 2015):

Provisions (£58.6 million (2015: £47.2 million)):
Refer to page 72 (Audit Committee Report), page 115 (accounting policy) and page 150 (financial disclosures).

The risk: In providing for known or probable costs, in particular to those resulting from indirect tax, regulatory, legal, environmental requirements or restructuring commitments, the Directors use their judgement, experience, and where appropriate receive external advice, in order to make provisions in the financial statements for such matters and provide appropriate disclosure in respect of contingent liabilities. The Directors have also recognised an insurance asset for certain matters for which a provision is held. The inherent uncertainty and risk could have a material impact on the group's financial position and result for the year.

Our response: Our audit procedures included obtaining an understanding from the Directors of the basis for their best estimates for provisions and insurance assets, and then challenging the basis used with reference to the latest available corroborative information, in light of our understanding of the business, and by obtaining third party confirmations where appropriate. We assessed the completeness of provisions by considering whether additional provisions were required at the balance sheet date, assessed the timing of obligations with particular respect to the restructuring commitments, as well as considering the reasonableness of provisions in light of historical claims. We met with the group's in-house legal counsel to discuss the nature of ongoing claims and in addition assessed whether the group's disclosures about provisions, contingent liabilities, and the movements in the year were appropriate.

Recognition of deferred tax assets (£65.9 million (2015: £57.1 million)):
Refer to page 72 (Audit Committee Report), page 122 (accounting policy) and pages 122 to 126 (financial disclosures).

The risk: The Group has recognised a significant deferred tax asset in respect of unutilised losses and other temporary differences arising in the US. The Group also has other temporary differences in the US of £100.4 million (2015: £87.8 million) for which no deferred tax asset has been recognised in these financial statements. The recognition or otherwise of a deferred tax asset in respect of these losses and temporary differences is based on judgement in respect of the quantum of expected future profits and the ability of the Group to offset any of its accumulated losses against these expected profits.

Our response: We compared the assumptions used in respect of future taxable profit forecasts to the Group's long-term forecasts. We considered, amongst other things, historical levels of US taxable profits, the historical accuracy of forecasts, the growth forecasts used by the Group, and the period over which those forecasts were applied. This included critically assessing the assumptions and judgements made by the Directors in those growth forecasts, by using our knowledge of the Group and the industry in which it operates, and by comparing growth assumptions to externally derived data. We involved tax specialists in assessing the ability of the Group to offset accumulated losses against these expected profits. We also assessed the adequacy of the Group's disclosures setting out the basis of the deferred tax asset recognised and not recognised and the level of estimation involved.

Income tax payable and provisions (£37.0 million (2015: £44.2 million)):
Refer to page 72 (Audit Committee Report), page 122 (accounting policy) and page 126 (financial disclosures).

The risk: Accounting for income tax positions requires the Directors to make significant judgements and estimates in relation to income tax issues and exposures. Due to the Group operating in a number of tax jurisdictions our audit concentrated on the complexities of transfer pricing and other international tax legislation, and the time taken for tax matters to be agreed with the tax authorities.

Our response: Our audit procedures included the use of our own tax specialists to assess the Group's tax positions, to consider its correspondence with the relevant tax authorities, to analyse and challenge the assumptions, such as the likelihood of a favourable resolution, used to determine tax provisions using our knowledge and experience of the application of international and local legislation by the relevant authorities and courts. We also considered the adequacy of the Group's disclosures in respect of net income tax payable and provisions.

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

Materiality for the Group financial statements as a whole was set at £4.0 million (2015: £4.6 million), determined with reference to a benchmark of Group profit before taxation, normalised to exclude separately reported items for restructuring costs and gains on employee benefit plans, of £102.7 million (2015: £92.0 million, which has been normalised to exclude separately reported items for restructuring costs), of which it represents 4% (2015: 5%).

We reported to the Audit Committee any corrected or uncorrected identified misstatements exceeding £200,000 (2015: £230,000), in addition to other identified misstatements that warranted reporting on qualitative grounds.

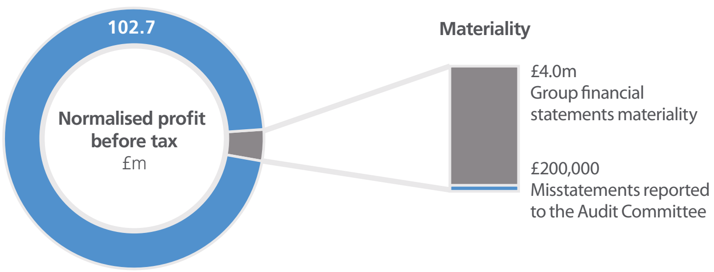
The Group operates through over 50 reporting components. Of the 20 (2015: 20) components in scope, we subjected 19 (2015: 19) to audits for Group reporting purposes and one (2015: one) to specified risk-focused audit procedures. The latter was not individually financially significant enough to require an audit for Group reporting purposes, but did present specific individual risks that needed to be addressed. The work on 18 (2015: 18) components was performed by component auditors and the rest by the Group audit team. For coverage achieved by Group reporting please refer to the charts below:

The remaining 31% (2015: 29%) of total Group revenue, 22% (2015: 22%) of profits and losses that made up total Group profit before tax and 18% (2015: 16%) of total Group assets is represented by a significant number of reporting components, none of which individually represented more than 2% (2015: 2%) of any of total Group revenue, profits and losses that made up total Group profit before tax or total Group assets. For these remaining components, we performed analysis at an aggregated Group level to re-examine our assessment that there were no significant risks of material misstatement within these.

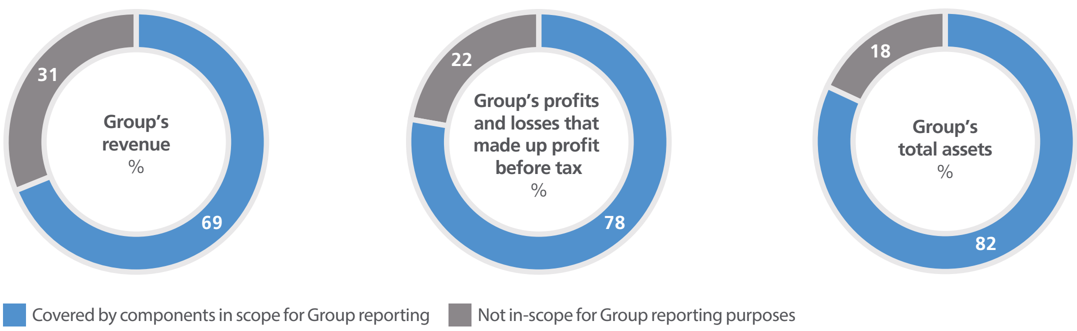
The Group audit team instructed component auditors as to the significant areas to be covered, including the relevant risks detailed above and the information to be reported back. The Group audit team approved the component materialities, which ranged from £0.1 million to £3.2 million (2015: £0.1 million to £3.8 million), having regard to the mix of size and risk profile of the Group across the components.

The Group audit team visited one component location (2015: four) in the US (2015: Brazil, the US, Germany and China). Telephone conference meetings were held with all component auditors. During these visits and meetings, the findings reported to the Group audit team were discussed in more detail, and any further work required by the Group audit team was then performed by the component auditor.

Materiality to the Group financial statements



Coverage



Independent Auditor's Report
To the Members of Vesuvius plc Only
continued

4 Our opinion on other matters prescribed by the Companies Act 2006 is unmodified
In our opinion:

> the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006; and

> the information given in the Strategic Report and the Directors' Report for the financial year is consistent with the financial statements.

Based solely on the work required to be undertaken in the course of the audit of the financial statements and from reading the Strategic report and the Directors' report:

> we have not identified material misstatements in those reports; and

> in our opinion, those reports have been prepared in accordance with the Companies Act 2006.

5 We have nothing to report on the disclosures of principal risks
Based on the knowledge we acquired during our audit, we have nothing material to add or draw attention to in relation to:

> the directors' statement on pages 19 to 21, concerning the principal risks, their management, and, based on that, the directors' assessment and expectations of the group's continuing in operation over the three years to 31 December 2019; or

> the disclosures in note 2 of the financial statements concerning the use of the going concern basis of accounting.

6 We have nothing to report in respect of the matters on which we are required to report by exception
Under ISAs (UK and Ireland) we are required to report to you if, based on the knowledge we acquired during our audit, we have identified other information in the annual report that contains a material inconsistency with either that knowledge or the financial statements, a material misstatement of fact, or that is otherwise misleading.

In particular, we are required to report to you if:

> we have identified material inconsistencies between the knowledge we acquired during our audit and the directors' statement that they consider that the annual report and financial statements taken as a whole is fair, balanced and understandable and provides the information necessary for shareholders to assess the group's position and performance, business model and strategy; or

> the Audit Committee Report does not appropriately address matters communicated by us to the audit committee.

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

> adequate accounting records have not been kept by the parent company, or returns adequate for our audit have not been received from branches not visited by us; or

> the parent company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or

> certain disclosures of directors' remuneration specified by law are not made; or

> we have not received all the information and explanations we require for our audit.

Under the Listing Rules we are required to review:

> the directors' statements, set out on pages 19, 20 and 99, in relation to going concern and longer-term viability; and

> the part of the Corporate Governance Statement on page 63 relating to the company's compliance with the eleven provisions of the 2014 UK Corporate Governance Code specified for our review.

We have nothing to report in respect of the above responsibilities.

Scope and responsibilities

As explained more fully in the Directors' Responsibilities Statement set out on page 103, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view. A description of the scope of an audit of financial statements is provided on the Financial Reporting Council's website at www.frc.org.uk/auditscopeukprivate. This report is made solely to the company's members as a body and is subject to important explanations and disclaimers regarding our responsibilities, published on our website at www.kpmg.com/uk/auditscopeukco2014a, which are incorporated into this report as if set out in full and should be read to provide an understanding of the purpose of this report, the work we have undertaken and the basis of our opinions.

Paul Korolkiewicz (Senior Statutory Auditor)
for and on behalf of KPMG LLP, Statutory Auditor
Chartered Accountants
15 Canada Square, London, E14 5GL

2 March 2017

Group Income Statement

For the year ended 31 December 2016

	Notes	2016 Headline performance £m	2016 Separately reported items £m	2016 Total £m	2015 Headline performance £m	2015 Separately reported items £m	2015 Total £m
Continuing operations							
Revenue	5	**1,401.4**	—	**1,401.4**	1,322.0	—	1,322.0
Manufacturing costs		**(1,018.6)**	—	**(1,018.6)**	(968.9)	—	(968.9)
Administration, selling and distribution costs		**(249.5)**	—	**(249.5)**	(229.1)	—	(229.1)
Trading profit	5	**133.3**	—	**133.3**	124.0	—	124.0
Amortisation of acquired intangible assets	16	—	**(17.1)**	**(17.1)**	—	(16.6)	(16.6)
Restructuring charges	7	—	**(28.5)**	**(28.5)**	—	(14.6)	(14.6)
Gain on employee benefit plan	28	—	**5.2**	**5.2**	—	—	—
Operating profit/(loss)		**133.3**	**(40.4)**	**92.9**	124.0	(31.2)	92.8
Net finance costs	9	**(14.5)**	—	**(14.5)**	(15.4)	—	(15.4)
Share of post-tax profit of joint ventures		**1.0**	**—**	**1.0**	—	—	—
Profit/(loss) before tax		**119.8**	**(40.4)**	**79.4**	108.6	(31.2)	77.4
Income tax (charge)/credits	10	**(31.4)**	**5.0**	**(26.4)**	(27.7)	2.9	(24.8)
Profit/(loss) from:							
Continuing operations		**88.4**	**(35.4)**	**53.0**	80.9	(28.3)	52.6
Discontinued operations	22	—	**10.2**	**10.2**	—	1.4	1.4
Profit/(loss)		**88.4**	**(25.2)**	**63.2**	80.9	(26.9)	54.0
Profit/(loss) attributable to:							
Owners of the parent		**82.1**	**(25.2)**	**56.9**	75.7	(26.9)	48.8
Non-controlling interests		**6.3**	—	**6.3**	5.2	—	5.2
Profit/(loss)		**88.4**	**(25.2)**	**63.2**	80.9	(26.9)	54.0
Earnings per share — pence	11						
Continuing operations — basic				**17.3**			17.6
— diluted				**17.3**			17.5
Total operations — basic				**21.1**			18.1
— diluted				**21.0**			18.1

Group Statement of Comprehensive Income

For the year ended 31 December 2016

	Notes	2016 £m	2015 £m
Profit		**63.2**	54.0
Items that will not be reclassified subsequently to income statement			
Remeasurement of defined benefit liabilities/assets	28.6	**9.5**	13.0
Income tax relating to items not reclassified	10.4	**(0.7)**	1.6
Items that may be reclassified subsequently to income statement			
Exchange differences on translation of the net assets of foreign operations		**207.7**	(29.3)
Exchange translation differences arising on net investment hedges	25	**(41.6)**	(6.1)
Other comprehensive income/(loss), net of income tax		**174.9**	(20.8)
Total comprehensive income		**238.1**	33.2
Total comprehensive income attributable to:			
Owners of the parent		**226.2**	28.2
Non-controlling interests		**11.9**	5.0
Total comprehensive income		**238.1**	33.2

Group Statement of Cash Flows

For the year ended 31 December 2016

	Notes	2016 £m	2015 £m
Cash flows from operating activities			
Cash generated from operations	12	**130.2**	140.0
Net interest paid		**(12.1)**	(13.6)
Income taxes paid		**(34.2)**	(31.8)
Net cash inflow from operating activities		**83.9**	94.6
Cash flows from investing activities			
Capital expenditure		**(31.3)**	(38.1)
Proceeds from the sale of property, plant and equipment		**1.6**	1.1
Proceeds from the sale of investments		**—**	0.3
Acquisition of subsidiaries and joint ventures, net of cash acquired	21	**(7.7)**	(25.1)
Dividends received from joint ventures		**2.0**	—
Other investing outflows		**—**	(1.6)
Net cash outflow from investing activities		**(35.4)**	(63.4)
Net cash inflow before financing activities		**48.5**	31.2
Cash flows from financing activities			
Proceeds from borrowings	14	**0.8**	44.7
Settlement of forward foreign exchange contracts		**20.6**	3.9
Purchase of own shares		**—**	(5.2)
Borrowing facility arrangement costs		**—**	(1.4)
Dividends paid to equity shareholders	26	**(43.9)**	(43.9)
Dividends paid to non-controlling shareholders		**(2.5)**	(2.2)
Net cash outflow from financing activities		**(25.0)**	(4.1)
Net increase in cash and cash equivalents	14	**23.5**	27.1
Cash and cash equivalents at 1 January		**67.0**	38.5
Effect of exchange rate fluctuations on cash and cash equivalents	14	**10.5**	1.4
Cash and cash equivalents at 31 December	13	**101.0**	67.0

	Continuing operations £m	**Discontinued operations £m**	**2016 total £m**	Continuing operations £m	Discontinued operations £m	2015 total £m
Free cash flow						
Net cash inflow/(outflow) from operating activities	83.9	—	83.9	100.8	(6.2)	94.6
Additional funding contributions into Group pension plans	7.7	—	7.7	3.7	—	3.7
Capital expenditure	(31.3)	—	(31.3)	(38.1)	—	(38.1)
Proceeds from the sale of property, plant and equipment	1.6	—	1.6	1.1	—	1.1
Dividends received from joint ventures	2.0	—	2.0	—	—	—
Dividends paid to non-controlling shareholders	(2.5)	—	(2.5)	(2.2)	—	(2.2)
Free cash flow	61.4	—	61.4	65.3	(6.2)	59.1

Group Balance Sheet
As at 31 December 2016

	Notes	2016 £m	2015* £m
Assets			
Property, plant and equipment	15	**323.6**	285.3
Intangible assets	16	**781.9**	684.6
Employee benefits – net surpluses	28	**78.8**	59.9
Interests in joint ventures		**18.0**	16.1
Investments		**2.6**	3.0
Income tax recoverable	10	**1.0**	1.3
Deferred tax assets	10	**92.1**	70.7
Other receivables		**23.4**	19.0
Total non-current assets		**1,321.4**	1,139.9
Cash and short-term deposits	13	**144.4**	101.5
Inventories	19	**207.7**	167.7
Trade and other receivables	18	**393.2**	316.3
Income tax recoverable	10	**3.9**	2.8
Derivative financial instruments	20	**—**	0.5
Total current assets		**749.2**	588.8
Total assets		**2,070.6**	1,728.7
Equity			
Issued share capital	23	**27.8**	27.8
Retained earnings	24	**2,370.0**	2,346.5
Other reserves	25	**(1,341.4)**	(1,501.9)
Equity attributable to the owners of the parent		**1,056.4**	872.4
Non-controlling interests		**42.1**	32.7
Total equity		**1,098.5**	905.1
Liabilities			
Interest-bearing borrowings	27.2	**330.8**	351.7
Employee benefits – net liabilities	28	**108.2**	95.2
Other payables	30	**16.5**	17.0
Provisions	32	**32.9**	29.5
Deferred tax liabilities	10	**48.6**	44.6
Total non-current liabilities		**537.0**	538.0
Interest-bearing borrowings	27.2	**133.9**	41.4
Trade and other payables	30	**232.7**	178.2
Income tax payable	10	**41.9**	48.3
Provisions	32	**25.7**	17.7
Derivative financial instruments	20	**0.9**	—
Total current liabilities		**435.1**	285.6
Total liabilities		**972.1**	823.6
Total equity and liabilities		**2,070.6**	1,728.7

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (note 21).

The financial statements were approved and authorised for issue by the Directors on 2 March 2017 and signed on their behalf by:

François Wanecq
Chief Executive

Guy Young
Chief Financial Officer

Group Statement of Changes in Equity

For the year ended 31 December 2016

	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 2015	27.8	(1,466.7)	2,332.1	893.2	29.9	923.1
Profit	—	—	48.8	48.8	5.2	54.0
Remeasurement of defined benefit liabilities/assets	—	—	13.0	13.0	—	13.0
Income tax relating to items not reclassified	—	—	1.6	1.6	—	1.6
Exchange differences on translation of the net assets of foreign operations	—	(29.1)	—	(29.1)	(0.2)	(29.3)
Exchange differences on translation of net investment hedges	—	(6.1)	—	(6.1)	—	(6.1)
Other comprehensive (loss)/income, net of income tax	—	(35.2)	14.6	(20.6)	(0.2)	(20.8)
Total comprehensive (loss)/income	—	(35.2)	63.4	28.2	5.0	33.2
Purchase of own shares	—	—	(5.2)	(5.2)	—	(5.2)
Recognition of share-based payments	—	—	0.1	0.1	—	0.1
Dividends paid (Note 26)	—	—	(43.9)	(43.9)	(2.2)	(46.1)
Total transactions with owners	—	—	(49.0)	(49.0)	(2.2)	(51.2)
As at 1 January 2016*	**27.8**	**(1,501.9)**	**2,346.5**	**872.4**	**32.7**	**905.1**
Profit	—	—	**56.9**	**56.9**	**6.3**	**63.2**
Remeasurement of defined benefit liabilities/assets	—	—	**9.5**	**9.5**	—	**9.5**
Income tax relating to items not reclassified	—	—	**(0.7)**	**(0.7)**	—	**(0.7)**
Exchange differences on translation of the net assets of foreign operations	—	**202.1**	—	**202.1**	**5.6**	**207.7**
Exchange differences on translation of net investment hedges	—	**(41.6)**	—	**(41.6)**	—	**(41.6)**
Other comprehensive income, net of income tax	—	**160.5**	**8.8**	**169.3**	**5.6**	**174.9**
Total comprehensive income	—	**160.5**	**65.7**	**226.2**	**11.9**	**238.1**
Recognition of share-based payments	—	—	**1.7**	**1.7**	—	**1.7**
Dividends paid (Note 26)	—	—	**(43.9)**	**(43.9)**	**(2.5)**	**(46.4)**
Total transactions with owners	—	—	**(42.2)**	**(42.2)**	**(2.5)**	**(44.7)**
As at 31 December 2016	**27.8**	**(1,341.4)**	**2,370.0**	**1,056.4**	**42.1**	**1,098.5**

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (note 21).

Notes to the Consolidated Financial Statements

1. General Information

Vesuvius plc ('Vesuvius' or 'the Company') is a public limited company registered in England and Wales and listed on the London Stock Exchange. The nature of the operations and principal activities of the Company and its subsidiary and joint venture companies ('the Group') is set out in the Strategic Report on pages 2 to 59 and its registered address is shown on page 162.

2. Basis of Preparation

2.1 Basis of accounting

The Consolidated Financial Statements have been prepared in accordance with International Financial Reporting Standards ('IFRS') as adopted by the European Union and, with the exception of defined benefit pension plans, certain provisions, available-for-sale investments and derivative financial instruments, under the historical cost convention.

2.2 Basis of consolidation

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

Where necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with those detailed herein to ensure that the Group financial statements are prepared on a consistent basis. All intra-Group transactions, balances, income and expenses are eliminated on consolidation.

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

2.3 Going concern

The Directors have prepared cash flow forecasts for the Group for a period in excess of 12 months from the date of approval of the 2016 financial statements. These forecasts reflect an assessment of current and future end-market conditions and their impact on the Group's future trading performance. The forecasts show that the Group will be able to operate within the current committed debt facilities and show continued compliance with the Company's financial covenants. On the basis of the exercise described above and the Group's available committed debt facilities, the Directors consider that the Group and Company have adequate resources to continue in operational existence for the foreseeable future. Accordingly, they continue to adopt a going concern basis in preparing the financial statements of the Group and the Company.

2.4 Functional and presentation currency

The financial statements are presented in millions of pound sterling, which is the functional currency of the Company, and rounded to one decimal place. Foreign operations are included in accordance with the policies set out in Note 27.1.

2.5 Disclosure of 'separately reported items'

IAS 1 Presentation of Financial Statements provides no definitive guidance as to the format of the income statement, but states key lines which should be disclosed. It also encourages the disclosure of additional line items and the reordering of items presented on the face of the income statement when appropriate for a proper understanding of the entity's financial performance. In accordance with IAS 1, the Company has adopted a columnar presentation for its Group income statement, to separately identify headline performance results, as the Directors consider that this gives a better view of the underlying results of the ongoing business. As part of this presentation format, the Company has adopted a policy of disclosing separately on the face of its Group income statement, within the column entitled 'Separately reported items', the effect of any components of financial performance for which the Directors consider separate disclosure would assist both in a better understanding of the financial performance achieved and in making projections of future results. 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.

Both materiality and the nature and function of the components of income and expense are considered in deciding upon such presentation. Such items may include, inter alia, the financial effect of exceptional items which occur infrequently, such as major restructuring activity, initial recognition and subsequent increase, decrease and amortisation of US deferred tax assets, together with items always reported separately, such as amortisation charges relating to acquired intangible assets, profits or losses arising on the disposal of continuing or discontinued operations and the taxation impact of the aforementioned exceptional items and items reported separately.

2. Basis of Preparation (continued)

2.6 New and revised IFRS

IFRS 9 Financial Instruments (effective after 1 January 2018, for the year ending 2018), replaces the existing guidance in IAS 39 Financial Instruments Recognition and Measurement. IFRS 9 includes revised guidance on the classification and measurement of financial instruments, including a new expected credit loss model for calculating impairment on financial assets, and new general hedge accounting requirements. It also carries forward the guidance on recognition and derecognition of financial instruments from IAS 39. Based on an assessment of the adoption of IFRS 9, the Group does not believe there will be a significant impact on its Consolidated Financial Statements.

IFRS 15 Revenue from Contracts with Customers (effective after 1 January 2018, for the year ending 2018) establishes a comprehensive framework for determining whether, how much and when revenue is recognised. It replaces existing revenue recognition guidance, including IAS 18 Revenue, IAS 11 Construction Contracts and IFRIC 13 Customer Loyalty Programmes. Based on an assessment of the adoption of IFRS 15, the Group does not believe there will be a significant impact on its Consolidated Financial Statements.

IFRS 16 Leases (effective after 1 January 2019, for the year ending 2019), replaces the existing guidance in IAS 17 Leases. IFRS 16 provides a single lessee accounting model, requiring lessees to recognise assets and liabilities for all leases unless the lease term is 12 months or less or the underlying asset has a low value. The Group is currently assessing the potential impact on its Consolidated Financial Statements resulting from the application of IFRS 16.

Other new or amended standards are not expected to have a significant impact on the Group's financial statements.

3. Accounting Policies and Critical Judgements

Determining the carrying amount of some assets and liabilities requires estimation of the effect of uncertain future events. The major sources of estimation uncertainty that have a significant risk of resulting in a material adjustment to the carrying amounts of assets or liabilities are noted below.

3.1 Goodwill and other intangible assets

The Directors use their judgement to determine the extent to which goodwill and other capitalised intangible assets have a value that will benefit the performance of the Group over future periods. To assist in making this judgement, the Directors undertake an assessment, at least annually, of the carrying value of the Group's capitalised goodwill and other intangible assets. In the assessment undertaken as at 31 December 2016, further details of which are given in Note 17, value in use was derived from discounted three-year cash flow projections and terminal value based on a growth rate of 2.5% in the years beyond the projection period. The projection period is, in the opinion of the Directors, an appropriate period over which to view the future results of the Group's businesses for this purpose. Changes to the assumptions used in making these forecasts could significantly alter the Directors' assessment of the carrying value of goodwill and other intangible assets.

3.2 Employee benefits

The Group's financial statements include the costs and obligations associated with the provision of pension and other post-retirement benefits to current and former employees. It is the Directors' responsibility to set the assumptions used in determining the key elements of the costs of meeting such future obligations. These assumptions are set after consultation with the Group's actuaries and include those used to determine regular service costs and the financing elements related to the plans' assets and liabilities. Whilst the Directors believe that the assumptions used are appropriate, a change in the assumptions used could affect the Group's profit and financial position.

3.3 Provisions

Vesuvius has extensive international operations and is subject to various legal and regulatory regimes, including those covering taxation and environmental matters. Several of the Group's 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 are aware of a number of issues which are, or may be, the subject of dispute with tax authorities. Provisions are made for the expected amounts payable in respect of known or probable costs resulting both from legal or other regulatory requirements, or from third-party claims. As the settlement of many of the obligations for which provision is made is subject to legal or other regulatory process, the timing and amount of the associated outflows is subject to some uncertainty. The Directors use their judgement and experience to make provisions in the financial statements for an appropriate amount relating to such matters.

Notes to the Consolidated Financial Statements
continued

3. Accounting Policies and Critical Judgements (continued)

3.4 Taxation

(a) Current tax

Tax benefits are not recognised unless it is probable that they will result in future economic benefits to the Group. In assessing the amount of the benefit to be recognised in the financial statements, the Directors exercise their judgement in considering the effect of negotiations, litigation and any other matters that they consider may impact upon the potential settlement. Any interest and penalties on tax liabilities are provided for in the tax charge. The Group operates internationally and is subject to tax in many different jurisdictions. As a consequence, the Group is routinely subject to tax audits and local enquiries which, by their very nature, can take a considerable period of time to conclude. Provisions are made for known issues based on all substantively enacted legislation, the Directors' interpretation of country-specific tax law and their assessment of the likely outcome. All income tax liabilities, provisions and assets are treated as income tax payable and recoverable in accordance with IAS 12.

(b) Deferred tax

The Group has recognised deferred tax assets in respect of unutilised losses and other timing differences arising in a number of the Group's businesses, further details of which are given in Note 10.4. Account has been taken of future forecasts of taxable profit in arriving at the values at which these assets are recognised. If these forecast profits do not materialise or change, or there are changes in tax rates or to the period over which the losses or timing differences might be recognised, then the value of deferred tax assets will need to be revised in a future period.

The Group also has losses and other timing differences, analysed in Note 10.4, for which no deferred tax assets have been recognised in these financial statements, relating either to loss-making subsidiaries where the future economic benefit of the timing difference is not probable or to where the timing difference is of such a nature that its value is dependent on certain types of profit being earned, such as capital profits. If trading or other appropriate profits are earned in future in these companies, these losses and other timing differences may yield benefit to the Group in the form of a reduced tax charge.

4. Alternative Performance Measures

The Company uses a number of Alternative Performance Measures (APMs) in addition to those reported in accordance with IFRS. The Directors believe that these APMs, listed below, are important when assessing the underlying financial and operating performance of the Group and its divisions. 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.

4.1 Headline

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

4.2 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 Review. 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.

4.3 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.

4.4 Trading profit

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

4.5 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.

4.6 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.

4. Alternative Performance Measures (continued)

4.7 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.

4.8 Operating cash flow

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

4.9 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. The calculation of cash conversion is detailed in the Financial Review.

4.10 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.

4.11 Average trade working capital to sales ratio

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

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

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

4.13 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.

4.14 Interest cover

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

4.15 Net debt

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

4.16 Net debt to EBITDA

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

4.17 Return on net assets ('RONA')

RONA is calculated as trading profit plus share of post-tax profit of joint ventures, divided by average net operating assets, at constant currency (being the average over the previous 12 months of property, plant and equipment, trade working capital and other operating receivables and payables). 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.

4.18 Constant currency

Figures presented at constant currency represent December 2015 numbers retranslated to average 2016 exchange rates.

Notes to the Consolidated Financial Statements *continued*

5. Segment Information

The segment information contained in this Note makes reference to several alternative performance measures, definitions of which can be found in Note 4.

5.1 Business segments

Operating segments for continuing operations

Operating segments are reported in a manner consistent with the internal reporting provided to the Executive Directors of the Board, who make the key operating decisions and are responsible for allocating resources and assessing performance of the operating segments. Reflecting the Group's management and internal reporting structure, segmental information is presented in respect of the two main business segments: Steel and Foundry. The principal activities of each of these segments are described in the Strategic Report on pages 36 to 47.

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

5.2 Revenue recognition

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 the sale of goods is recognised when persuasive evidence exists that the significant risks and rewards of ownership have been transferred to the customer, recovery of the consideration is probable, there is no continuing management involvement with the goods, and the amount of revenue can be measured reliably. A provision for anticipated returns is made based primarily on historical return rates. Where a contractual arrangement consists of two or more separate elements that can be provided to customers either on a stand-alone basis or as an extra, such as the provision of supplementary materials with equipment, revenue is recognised for each element as if it were an individual contractual arrangement.

5.3 Income statement

The operating segment results from continuing operations for 2016 and 2015 are presented below.

	2016		
	Steel £m	Foundry £m	Continuing operations £m
Segment revenue	**942.0**	**459.4**	**1,401.4**
Segment EBITDA	**107.0**	**68.6**	**175.6**
Segment depreciation	**(27.8)**	**(14.5)**	**(42.3)**
Segment trading profit	**79.2**	**54.1**	**133.3**
Return on sales margin	*8.4%*	*11.8%*	*9.5%*
Amortisation of acquired intangible assets			**(17.1)**
Restructuring charges			**(28.5)**
Gain on employee benefit plan			**5.2**
Operating profit			**92.9**
Net finance costs			**(14.5)**
Share of post-tax profit of joint ventures			**1.0**
Profit before tax			**79.4**
Capital expenditure additions	**23.7**	**11.5**	**35.2**

5. Segment Information (continued)

5.3 Income statement (continued)

	2015 Steel £m	2015 Foundry £m	2015 Continuing operations £m
Segment revenue	897.6	424.4	1,322.0
Segment EBITDA	103.8	57.3	161.1
Segment depreciation	(24.3)	(12.8)	(37.1)
Segment trading profit	79.5	44.5	124.0
Return on sales margin (%)	*8.9%*	*10.5%*	*9.4%*
Amortisation of acquired intangible assets			(16.6)
Restructuring charges			(14.6)
Operating profit			92.8
Net finance costs			(15.4)
Profit before tax			77.4
Capital expenditure additions	24.4	10.6	35.0

5.4 Geographical analysis

	External revenue		Non-current assets	
	2016 £m	2015 £m	**2016 £m**	2015* £m
US	**240.9**	247.2	**310.6**	260.8
Germany	**192.4**	174.8	**121.5**	103.6
China	**113.1**	107.2	**93.2**	85.4
UK	**59.4**	71.9	**119.5**	131.9
Brazil	**70.7**	69.2	**69.2**	44.5
India	**119.2**	96.9	**39.7**	37.8
France	**48.0**	44.9	**20.1**	17.5
Spain	**42.5**	41.7	**27.7**	33.9
Rest of the World	**515.2**	468.2	**349.0**	293.9
Continuing operations	**1,401.4**	1,322.0	**1,150.5**	1,009.3

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (note 21).

External revenue disclosed in the table above is based upon the geographical location of the operation. Non-current assets exclude employee benefits net surpluses and deferred tax assets. Information relating to the Group's products and services is given in the Strategic Report on pages 2 to 59. The Group is not dependent upon any single customer for its revenue and no single customer, for either of the years presented in the tables above, accounts for more than 10% of the Group's total external revenue.

Notes to the Consolidated Financial Statements
continued

6. Amounts payable to KPMG LLP and its Associates

	2016 £m	2015 £m
Fees payable to the Company's auditor and its associates for the audit of the parent Company and Consolidated Financial Statements	**0.4**	0.4
Fees payable to the Company's auditor and its associates for other services:		
Audit of the Company's subsidiaries	**1.5**	1.4
Audit-related assurance services	**0.1**	0.1
Tax compliance and advisory	—	0.1
Total auditor's remuneration	**2.0**	2.0

Total auditor's remuneration of £2.0m in 2016 all related to continuing operations, of which £1.9m related to audit fees and £0.1m of non-audit fees, in respect of the interim review fee (2015: £2.0m, including £1.8m of audit fees and £0.2m of non-audit fees, the latter comprising £0.1m in respect of the interim review fee and £0.1m for taxation advice). It is the Group's policy not to use the Group's auditor for non-audit services other than in very limited circumstances and where they are best placed to do so.

7. Restructuring Charges

The 2016 restructuring charges were £28.5m (2015: £14.6m). The Group-wide restructuring programme initiated in 2015 was continued, resulting in charges of £28.5m (2015: £15.5m) reflecting redundancy costs of £21.4m (2015: £13.6m), plant closure costs of £4.2m (2015: £1.3m), consultancy fees of £2.0m (2015: £0.6m) and an inventory write-off of £0.9m (2015: £nil). In 2015 there was also a release of onerous lease provisions of £0.5m and a £0.4m release of provisions for potential claims that had since expired relating to the termination of agents.

The net tax credit attributable to the total restructuring charges was £3.8m (2015: £1.5m).

Cash costs of £16.8m (2015: £11.5m) (Note 12) were incurred in the year in respect of the restructuring programme leaving provisions made but unspent of £18.5m (Note 32) as at 31 December 2016 (2015: £9.8m), of which £2.7m relates to future costs in respect of leases expiring between one and six years.

8. Employees

8.1 Employee benefits expense

	2016 £m	2015 £m
Wages and salaries	**301.6**	271.5
Social security costs	**46.7**	42.5
Redundancy costs	**21.4**	13.6
Other restructuring costs	**0.2**	—
Share-based payments (Note 29)	**1.7**	0.1
Pension costs — defined contribution pension plans (Note 28)	**10.7**	10.7
— defined benefit pension plans (Note 28)	**2.1**	6.9
Other post-retirement benefits (Note 28)	**0.4**	0.4
Total employee benefits expense	**384.8**	345.7

Of the total employee benefits expense of £384.8m (2015: £345.7m), £367.1m (2015: £331.2m) was charged in arriving at trading profit, £5.2m (2015: £nil) was credited from settlement gains relating to employee benefit plans, £1.3m (2015: £0.9m) was charged within ordinary net finance costs, and £21.6m (2015: £13.6m) was charged to restructuring costs. Within redundancy costs reported in the table above, are £0.3m (2015: £0.8m) of defined benefit pension plan costs and £0.1m (2015: £nil) of defined contribution plan costs.

At constant rates, the total employee benefits expense for 2015 was £377.5m.

8. Employees (continued)

8.2 Average number of employees

	2016 no.	2015 no.
Steel	**7,725**	8,133
Foundry	**3,101**	3,293
Continuing operations	**10,826**	11,426
Discontinued operations	—	—
Total average number of employees	**10,826**	11,426

As at 31 December 2016, the Group had 10,840 employees (2015: 10,912).

In December 2016 the Group acquired the mould and tundish flux business of Carboox with 50 employees. If the business had been acquired on 1 January, the average headcount would have been 10,867.

8.3 Remuneration of key management personnel

The remuneration of the Directors, who are the key management personnel of the Group, is set out below in aggregate for each of the categories specified in IAS 24 Related Party Disclosures. Further information about the remuneration of individual Directors is provided in the audited part of the Directors' Remuneration Report on pages 79 to 98.

	2016 £m	2015 £m
Short-term employee benefits	**1.5**	0.9
Post-employment benefits	**0.3**	0.3
Share-based payments	**0.5**	(0.6)
Total remuneration of key management personnel	**2.3**	0.6

9. Net Finance Costs

9.1 Accounting policy

Borrowing costs that are directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalised as part of the cost of that asset. Capitalised borrowing costs for 2016 were nil (2015: nil). All other borrowing costs are recognised as an expense in the income statement using the effective interest rate method.

9.2 Total net finance costs

	2016 £m	2015 £m
Interest payable on borrowings		
Loans, overdrafts and factoring arrangements	**15.1**	14.9
Obligations under finance leases	**0.2**	0.1
Amortisation of capitalised arrangement fees	**0.5**	0.4
Total interest payable on borrowings	**15.8**	15.4
Interest on net retirement benefits obligations	**1.3**	0.9
Adjustment to discounts on provisions and other liabilities	**(0.2)**	1.0
Adjustment to discounts on receivables	**0.3**	(0.2)
Finance income	**(2.7)**	(1.7)
Total net finance costs	**14.5**	15.4

Notes to the Consolidated Financial Statements
continued

10. Income Tax

10.1 Accounting policy

Tax expense represents the sum of current tax and deferred tax. Current and deferred tax are recognised in profit or loss except to the extent that they relate to items charged or credited in other comprehensive income or directly to equity, in which case the associated tax is also dealt with in other comprehensive income or directly in equity.

Current tax

Current tax is based on taxable profit for the year. Taxable profit differs from profit before tax as reported in the income statement because it excludes items of income or expense that are taxable or deductible in other years and it further excludes items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates and laws that have been enacted, or substantively enacted, by the balance sheet date.

A provision is recognised when the Group considers it has a present tax obligation as the result of a past event and it is probable that the Group will be required to settle that obligation. Provisions established for such uncertain tax positions are made using a best estimate of the tax expected to be paid, based on a qualitative and quantitative assessment of all relevant information. Such a provision is typically required where the underlying tax issue is subject to interpretation and remains to be agreed, and therefore is uncertain as to outcome. Principally the uncertain tax positions for which a provision is made relate to the interpretation of tax legislation and guidance regarding transfer pricing arrangements that have been entered into in the normal course of business. In accordance with IAS 12, tax provisions are included as income tax payable on the face of the balance sheet, and movements in tax provisions are included within income tax charges or credits in the Group income statement.

In assessing any appropriate provision requirements for uncertain tax items, the Group considers progress made in discussions with the tax authorities, expert advice on the likely outcome and any recent developments in case law. Due to the uncertainty associated with such tax items, it is possible that at a future date, on conclusion of the open matters, the final outcome may vary significantly. Any such variations will affect the financial results in the year in which such a determination is made.

In arriving at its current tax charge, the Group also makes careful assessment of the likely impact of tax law changes. In particular, it has considered the impact of any imminent tax reform and the actual or likely domestic enactments of the actions decided by G20 leaders in the OECD Base Erosion and Profit Shifting Project announced in late 2015. Vesuvius considers that these developments do not currently have a material effect on its tax position. However, it continues to monitor developments, in particular in relation to potential tax reform as is currently under consideration in the US and elsewhere.

Deferred tax

Deferred tax is recognised on differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax bases used in the computation of taxable profit and is accounted for using the balance sheet liability method. Deferred tax liabilities are generally recognised for all taxable temporary differences and deferred tax assets are recognised to the extent that it is probable that taxable profits will be available against which deductible temporary differences can be utilised. Such assets and liabilities are not recognised if the temporary difference arises from the initial recognition of goodwill or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable profit nor the accounting profit. Deferred tax is calculated at the tax rates that are expected to apply in the period when the liability is settled or the asset is realised, based on tax rates and laws that have been enacted, or substantively enacted, by the balance sheet date.

Deferred tax liabilities are recognised for taxable temporary differences arising on investments in subsidiaries and interests in joint ventures, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. The carrying amount of deferred tax assets is reviewed at each balance sheet date and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered. Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when they relate to income taxes levied by the same taxation authority and the Group intends to settle its current tax assets and liabilities on a net basis.

10. Income Tax (continued)

10.2 Income tax charge

	2016 £m	2015 £m
Current tax		
Overseas taxation	**38.3**	28.3
Adjustments in respect of prior years	**(2.9)**	(0.6)
Total current tax, continuing operations	**35.4**	27.7
Deferred tax		
Origination and reversal of temporary taxable differences	**(9.0)**	(3.7)
Adjustments in respect of prior years	—	0.8
Total deferred tax, continuing operations	**(9.0)**	(2.9)
Total income tax charge	**26.4**	24.8
Total income tax charge attributable to:		
Continuing operations — headline performance	**31.4**	27.7
— separately reported items	**(5.0)**	(2.9)
Total income tax charge	**26.4**	24.8

Included in the Group's total income tax charge are charges and credits meeting the criteria set out in Note 2.5, to be treated as separately reported items, as analysed in the following table:

Separately reported items	2016 £m	2015 £m
Utilisation of previously recognised US deferred tax asset	**6.2**	9.7
Additional recognition of US deferred tax asset	**(4.1)**	(6.4)
Net movement in US deferred tax asset	**2.1**	3.3
Restructuring charges	**(3.8)**	(1.5)
Gain on employee benefit plan	**0.4**	—
Amortisation of acquired intangibles	**(3.7)**	(4.7)
Total tax credit on separately reported items	**(5.0)**	(2.9)

The net tax charge in the Group statement of comprehensive income in the year amounted to £0.7m (2015: £1.6m credit), of which £0.7m (2015: £0.9m credit) related to tax on net actuarial gains and losses on employee benefits plans and £nil (2015: £0.7m) was tax on exchange differences.

Included in profit from discontinued operations (Note 22) is a tax credit of £9.0m (2015: £nil) relating to the release of a provision for possible China taxes arising during the demerger of the Alent business in 2012. After further consultation with advisors, and in light of the publication in 2015 by the Chinese tax authorities of additional guidance on the applicable taxes, it was decided this provision was no longer required.

The Group operates in a number of countries that have differing tax rates, laws and practices. Changes in any of these areas could, adversely or positively, impact the Group's tax charge in the future. Continuing losses, or insufficiency of taxable profit to absorb all expenses, in any subsidiary could have the effect of increasing tax charges in the future as effective tax relief may not be available for those losses or expenses. Other significant factors affecting the tax charge are described in Notes 3.4, 10.1 and 10.6.

Notes to the Consolidated Financial Statements *continued*

10. Income Tax (continued)

10.3 Reconciliation of income tax charge to profit before tax

	2016 £m	2015 £m
Profit before tax	**79.4**	77.4
Tax at the UK corporation tax rate of 20% (2015: 20.25%)	**15.9**	15.7
Overseas tax rate differences	**2.7**	5.7
Withholding taxes	**3.6**	3.9
Amortisation of intangibles	**(0.3)**	(1.2)
Expenses not deductible for tax purposes	**1.6**	1.4
Income taxed in advance	**4.6**	0.7
Non-taxable income	**(1.2)**	—
US deferred tax asset not previously recognised	**(4.1)**	(6.4)
Deferred tax assets not recognised	**7.5**	5.0
Utilisation of previously unrecognised tax losses	**(1.0)**	(0.2)
Adjustments in respect of prior years	**(2.9)**	0.2
Total income tax charge	**26.4**	24.8

10.4 Deferred tax

	Interest £m	Other operating losses £m	Pension costs £m	Intangible assets £m	Other temporary differences £m	Total £m
As at 1 January 2015	30.4	23.1	1.3	(36.4)	2.7	21.1
Exchange adjustments/other	1.4	0.4	(1.1)	1.3	(0.3)	1.7
Acquisition	—	—	—	—	(1.2)	(1.2)
Credit to group statement of comprehensive income	—	0.7	0.9	—	—	1.6
Credit to group income statement	—	0.5	0.2	4.7	0.8	6.2
Net (charge)/credit to group income statement US	(7.7)	(0.9)	—	—	5.3	(3.3)
As at 1 January 2016	**24.1**	**23.8**	**1.3**	**(30.4)**	**7.3**	**26.1**
Exchange adjustments/other	**4.5**	**2.5**	**1.9**	**(4.2)**	**4.4**	**9.1**
Charge to group statement of comprehensive income	**—**	**—**	**(0.7)**	**—**	**—**	**(0.7)**
Credit to group income statement	**0.2**	**3.8**	**—**	**5.3**	**1.8**	**11.1**
Net (charge)/credit to group income statement US	**(2.1)**	**(0.2)**	**—**	**—**	**0.2**	**(2.1)**
As at 31 December 2016	**26.7**	**29.9**	**2.5**	**(29.3)**	**13.7**	**43.5**

The £5.3m tax credit to the income statement in respect of intangible assets comprises a credit of £3.7m (2015: £4.7m credit) for amortisation of acquired intangibles and a £1.8m credit (2015: £nil) arising from restructuring activity which is included in separately reported items, net of £0.2m (2015: £nil) amortisation of this asset included within the income tax charge on headline performance.

	2016 £m	2015 £m
Recognised in the Group balance sheet as:		
Non-current deferred tax assets	**92.1**	70.7
Non-current deferred tax liabilities	**(48.6)**	(44.6)
Net total deferred tax assets	**43.5**	26.1

Included in non-current deferred tax assets is £65.9m (2015: £57.1m) in respect of the partial recognition of temporary differences arising in the US computed in accordance with the policy set out in Note 10.1 above. The Group remains confident of the recovery of this asset. £100.4m (2015: £87.8m) remains unrecognised.

10. Income Tax (continued)

10.4 Deferred tax (continued)

In view of its material size and nature, any tax credit reflected in the Group income statement arising from the recognition of this asset is presented separately from the tax charge on headline performance, in accordance with the principles outlined in Note 2.5. Subsequent increase, decrease and utilisation of the resultant deferred tax asset would similarly be expected to be presented in this manner, as the Directors consider that the separate identification of deferred tax for material temporary differences would assist both in a better understanding of the financial performance achieved, and in making projections of future results of the Group.

Part of the US deferred tax asset is expected to be realised in respect of US pension costs which have been reflected directly in the statement of other comprehensive income, resulting in a £3.3m tax credit in the statement of other comprehensive income in 2015. There was a consequent £3.3m utilisation of that asset recognised in the Group income statement in that year. No further such credit arose in 2016.

Tax loss carry-forwards and other temporary differences with a tax value of £1.4m (2015: £1.3m) were recognised by subsidiaries reporting a loss. On the basis of approved business plans of these subsidiaries, the Directors consider it probable that the tax loss carry-forwards and temporary differences can be offset against future taxable profits.

The total deferred tax assets not recognised as at 31 December 2016 were £263.1m (2015: £256.7m), as analysed below. In accordance with the accounting policy in Note 10.1, these items have not been recognised as deferred tax assets on the basis that their future economic benefit is not probable. In total, there was an increase of £6.4m (2015: £2.6m decrease) in net unrecognised deferred tax assets during the year.

	2016 £m	2015 £m
Operating losses (further described below)	**118.6**	118.2
Unrelieved US interest (may be carried forward indefinitely)	**66.6**	61.3
Capital losses available to offset future UK capital gains (may be carried forward indefinitely)	**28.0**	33.0
UK ACT credits (may be carried forward indefinitely)	**13.1**	13.1
US tax credits	**3.6**	2.4
Other temporary differences	**33.2**	28.7
Total deferred tax assets not recognised	**263.1**	256.7

The Group has significant net operating losses to the value of £148.5m (2015: £142.0m), only £29.9m (2015: £23.8m) of which meet the criteria set out in Note 10.1 to be recognised on the balance sheet

	Operating losses recognised 2016 £m	**Operating losses not Recognised 2016 £m**	**Total 2016 £m**	Operating losses recognised 2015 £m	Operating losses not Recognised 2015 £m	Total 2015 £m
UK (may be carried forward indefinitely)	—	**78.6**	**78.6**	–	84.6	84.6
USA (due to expire 2024 - 2031)	**26.5**	**4.9**	**31.4**	22.4	3.4	25.8
ROW (may be carried forward indefinitely)	**3.4**	**23.0**	**26.4**	1.4	16.3	17.7
ROW (due to expire within 5 years)	—	**12.1**	**12.1**	–	13.9	13.9
	29.9	**118.6**	**148.5**	23.8	118.2	142.0

The £38.5m (2015: £31.6m) operating losses available to set against future income in the rest of the world arise in a number of countries, reflecting the spread of the Group's operations.

As at 31 December 2016, the Group had unrecognised US tax credits with a value of £3.6m (2015: £2.4m) as follows:

	2016 £m	2015 £m
US research and experimentation credits (due to expire 2018 to 2033)	**1.6**	1.3
US foreign tax credits (due to expire 2022 to 2024)	**2.0**	1.1
US tax credits	**3.6**	2.4

There are no temporary differences associated with investments in subsidiaries and interests in joint ventures for which deferred tax liabilities have not been recognised.

Notes to the Consolidated Financial Statements
continued

10. Income Tax (continued)

10.4 Deferred tax (continued)

Further UK corporation tax rate reductions to 19% from 1 April 2017 and 17% from 1 April 2020, were substantively enacted on 6 September 2016. Accordingly, the Group's closing UK deferred tax liability has been provided using a tax rate of 17% except where the reversals are expected to arise prior to 1 April 2020.

10.5 Income tax payable and recoverable

	2016 £m	2015 £m
Liabilities for income tax payable	**10.4**	8.7
Provisions for uncertain tax provisions	**31.5**	39.6
	41.9	48.3
Income tax recoverable within one year	**3.9**	2.8
Income tax recoverable after more than one year	**1.0**	1.3
Total income tax recoverable	**4.9**	4.1
Net liability	**37.0**	44.2

Provisions for uncertain tax provisions are calculated in accordance with the policy outlined in Note 10.1, and are treated as income tax payable and recoverable in accordance with IAS 12.

10.6 Key factors impacting the sustainability of the effective tax rate are as follows:

Material changes in the geographic mix of profits

The Group's effective tax rate is sensitive to changes in the geographic mix of profits and level of profits, and reflects a combination of higher rates in certain jurisdictions such as India, Mexico, Germany and Belgium, nil effective tax rates in the UK and the US due to the availability of unutilised tax losses and rates that lie somewhere in between. The Group experienced such a change in mix in 2016 principally as a result of good business performance in India, giving rise to the increase in its effective tax rate on headline performance to 26.4% compared to the equivalent rate in 2015 of 25.5%.

Changes in tax rates

Changes in tax rates in the jurisdictions in which the Group operates could have a material effect on the Group's effective tax rate. As stated in Note 10.1, the Group is tracking closely the impact on its business of domestic enactments of the actions decided by G20 leaders in the OECD Base Erosion and Profit Shifting Project announced in late 2015, and other possible tax reform worldwide particularly in the US.

Availability of tax advantaged rates

Vesuvius in China qualifies for a tax advantaged rate of 15% (rather than the headline rate of 25%), on part of its profits due to the high technology nature of its business. Eligibility for this rate is reviewed on a regular basis by the Chinese tax authority, and was worth approximately £1.0m in 2016 (2015: £0.7m). Without that benefit, the Group's effective tax rate on headline performance, would have been 0.8% higher in 2016 (2015: 0.7%).

Resolution of tax judgements

At any one time, the Group can be subject to a number of challenges by tax authorities in the jurisdictions in which it operates. The outcome of these challenges is inherently uncertain, potentially resulting in a different tax charge from the amounts initially provided.

Timing of recognising tax benefits from brought forward losses in the US

In accordance with the criteria set out in Note 10.1, movements on the US deferred tax asset are recognised in separately reported items. Consequently, such movements have no impact on the Group's effective tax rate on headline performance.

Should, however, the 2016 profits earned in the US have been fully subject to US Federal and State taxes, then the Group's effective tax rate on headline performance (excluding the Group's share of post-tax profit of joint ventures) would have been approximately 3.4% higher (2015: 5% higher).

11. Earnings per Share ('EPS')

11.1 Earnings for EPS

Basic and diluted EPS from continuing operations are based upon the profit attributable to owners of the parent, as reported in the Group income statement, of £46.7m (2015: £47.4m), being the profit for the year of £53.0m (2015: £52.6m) less non-controlling interests of £6.3m (2015: £5.2m); basic and diluted EPS from total operations are based on the profit attributable to owners of the parent of £56.9m (2015: £48.8m); headline and diluted headline EPS are based upon headline profit from continuing operations attributable to owners of the parent of £82.1m (2015: £75.7m). The table below reconciles these different profit measures.

	Continuing operations £m	**Discontinued operations £m**	**2016 total £m**	Continuing operations £m	Discontinued operations £m	2015 total £m
Profit attributable to owners of the parent	**46.7**	**10.2**	**56.9**	47.4	1.4	48.8
Adjustments for separately reported items:						
Amortisation of acquired intangible assets	**17.1**			16.6		
Restructuring charges	**28.5**			14.6		
Gain on employee benefit plan	**(5.2)**			—		
Income tax credit	**(5.0)**			(2.9)		
Headline profit attributable to owners of the parent	**82.1**			75.7		

11.2 Weighted average number of shares

	2016 £m	2015 £m
For calculating basic and headline EPS	**269.9**	269.7
Adjustment for potentially dilutive ordinary shares	**0.8**	0.6
For calculating diluted and diluted headline EPS	**270.7**	270.3

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

11.3 Per share amounts

		Continuing operations pence	**Discontinued operations pence**	**2016 total pence**	Continuing operations pence	Discontinued operations pence	2015 total pence
Earnings per share	**— basic**	**17.3**	**3.8**	**21.1**	17.6	0.5	18.1
	— headline	**30.4**			28.1		
	— diluted	**17.3**	**3.7**	**21.0**	17.5	0.6	18.1
	— diluted headline	**30.3**			28.0		

Notes to the Consolidated Financial Statements
continued

12. Cash Generated from Operations

	Continuing operations £m	Discontinued operations £m	2016 total £m	Continuing operations £m	Discontinued operations £m	2015 total £m
Operating profit	**92.9**	**1.2**	**94.1**	92.8	1.4	94.2
Adjustments for:						
Amortisation of acquired intangible assets	**17.1**	**—**	**17.1**	16.6	—	16.6
Restructuring charges	**28.5**	**—**	**28.5**	14.6	—	14.6
Gains relating to employee benefit plans	**(5.2)**	**—**	**(5.2)**	—	—	—
Depreciation	**42.3**	**—**	**42.3**	37.1	—	37.1
EBITDA	**175.6**	**1.2**	**176.8**	161.1	1.4	162.5
Net (increase)/decrease in trade and other working capital	**(20.9)**	**(1.2)**	**(22.1)**	0.3	(7.6)	(7.3)
Outflow related to restructuring charges	**(16.8)**	**—**	**(16.8)**	(11.5)	—	(11.5)
Additional pension funding contributions	**(7.7)**	**—**	**(7.7)**	(3.7)	—	(3.7)
Cash generated from operations	**130.2**	**—**	**130.2**	146.2	(6.2)	140.0

13. Cash and Cash Equivalents

	2016 £m	2015 £m
Cash at bank and in hand	**144.4**	101.5
Cash and short-term deposits	**144.4**	101.5
Bank overdrafts	**(43.4)**	(34.5)
Cash and cash equivalents in the Group statement of cash flows	**101.0**	67.0

Bank overdrafts that are repayable on demand and form an integral part of the Group's cash management are included as a component of cash and cash equivalents for the purpose of the Group statement of cash flows.

14. Reconciliation of Movement in Net Debt

	Balance as at 1 Jan 2016 £m	Foreign exchange adjustments £m	Non-cash movements £m	Cash flow £m	Balance as at 31 Dec 2016 £m
Cash and cash equivalents					
Cash at bank and in hand	**101.5**	**17.4**	**—**	**25.5**	**144.4**
Bank overdrafts	**(34.5)**	**(6.9)**	**—**	**(2.0)**	**(43.4)**
	67.0	**10.5**	**—**	**23.5**	**101.0**
Borrowings, excluding bank overdrafts					
Current	**(7.5)**	**(8.9)**	**(81.1)**	**6.4**	**(91.1)**
Non-current	**(353.3)**	**(52.5)**	**81.1**	**(7.2)**	**(331.9)**
	(360.8)	**(61.4)**	**—**	**(0.8)**	**(423.0)**
Capitalised arrangement fees	**2.2**	**—**	**(0.5)**	**—**	**1.7**
Net debt	**(291.6)**	**(50.9)**	**(0.5)**	**22.7**	**(320.3)**

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

15. Property, Plant and Equipment

15.1 Accounting policy

Freehold land is carried at cost less accumulated impairment losses. Other items of property, plant and equipment are carried at cost less accumulated depreciation and accumulated impairment losses. Costs are capitalised only when it is probable that they will result in future economic benefits flowing to the Group and when they can be measured reliably. All other repairs and maintenance expenditure are charged to the Group income statement in the period in which they are incurred.

Freehold land is not depreciated as it has an infinite life. Depreciation on other items of property, plant and equipment begins when the asset is available for use and is charged to the Group income statement on a straight-line basis so as to write off the cost less residual value of the asset over its estimated useful life as follows:

15. Property, Plant and Equipment (continued)

15.1 Accounting policy (continued)

Asset category		Estimated useful life
Freehold property		between ten and 50 years
Leasehold property		the term of the lease
Plant and equipment	— motor vehicles and information technology equipment	between one and five years
	— other	between three and 15 years

The depreciation method used, residual values and estimated useful lives are reviewed annually and changed, if appropriate. As described in Note 17.1, an asset's carrying amount is immediately written down to its recoverable amount if its carrying amount is greater than its estimated recoverable amount. Gains and losses arising on disposals are determined by comparing sales proceeds with carrying amount and are recognised in the Group income statement.

15.2 Movement in net book value

	Freehold property £m	Leasehold property £m	Plant and equipment £m	Construction in progress £m	Total £m
Cost					
As at 1 January 2015	157.0	3.7	479.5	39.9	680.1
Exchange adjustments	(2.3)	—	(12.8)	(1.6)	(16.7)
Capital expenditure additions	5.5	—	21.1	8.4	35.0
Acquisitions through business combinations	3.8	—	1.9	—	5.7
Disposals	—	—	(26.0)	(0.1)	(26.1)
Reclassifications	5.7	(1.4)	13.5	(17.8)	—
As at 1 January 2016	**169.7**	**2.3**	**477.2**	**28.8**	**678.0**
Exchange adjustments	**29.9**	**0.1**	**84.8**	**6.0**	**120.8**
Capital expenditure additions	**1.3**	**—**	**18.3**	**15.6**	**35.2**
Acquisitions through business combinations	**—**	**—**	**1.1**	**—**	**1.1**
Disposals	**(1.6)**	**—**	**(41.9)**	**(0.2)**	**(43.7)**
Reclassifications	**4.0**	**—**	**10.5**	**(14.5)**	**—**
As at 31 December 2016	**203.3**	**2.4**	**550.0**	**35.7**	**791.4**
Accumulated depreciation and impairment losses					
As at 1 January 2015	57.9	2.0	328.4	—	388.3
Exchange adjustments	(0.4)	—	(7.2)	—	(7.6)
Depreciation charge	5.1	0.2	31.8	—	37.1
Impairment charge	—	—	0.6	—	0.6
Disposals	—	—	(25.7)	—	(25.7)
Reclassifications	2.1	(0.8)	(1.3)	—	—
As at 1 January 2016	**64.7**	**1.4**	**326.6**	**—**	**392.7**
Exchange adjustments	**11.9**	**—**	**59.5**	**—**	**71.4**
Depreciation charge	**5.9**	**0.2**	**36.2**	**—**	**42.3**
Impairment charge	**0.4**	**—**	**—**	**—**	**0.4**
Disposals	**(1.2)**	**—**	**(37.8)**	**—**	**(39.0)**
Reclassifications	**1.2**	**—**	**(1.2)**	**—**	**—**
As at 31 December 2016	**82.9**	**1.6**	**383.3**	**—**	**467.8**
Net book value as at 31 December 2016	**120.4**	**0.8**	**166.7**	**35.7**	**323.6**
Net book value as at 31 December 2015	105.0	0.9	150.6	28.8	285.3
Net book value as at 1 January 2015	99.1	1.7	151.1	39.9	291.8

The net book value of assets held under finance leases as at 31 December 2016, 31 December 2015 and 1 January 2015 was not material.

Notes to the Consolidated Financial Statements
continued

16. Intangible Assets

Intangible assets comprise goodwill and other intangible assets that have been acquired through business combinations.

16.1 Accounting policy

(a) Goodwill

Goodwill arising in a business combination is initially recognised as an asset at cost, measured as the excess of the aggregate of the acquisition-date fair value of the consideration transferred and the amount of any non-controlling interest acquired over the net of the acquisition-date fair value amounts of the identifiable assets acquired and liabilities assumed. When the excess is negative, a bargain purchase gain is recognised immediately in profit or loss. Goodwill is subsequently measured at cost less accumulated impairment losses, with impairment testing carried out annually, or more frequently when there is an indication that the cash-generating unit to which the goodwill has been allocated may be impaired. On disposal of a business, the attributable amount of goodwill is included in the calculation of the profit or loss on disposal.

(b) Other intangible assets

Intangible assets other than goodwill are recognised on business combinations if they are separable, or if they arise from contractual or other legal rights, and their value can be measured reliably. They are initially measured at cost, which is equal to the acquisition-date fair value, and subsequently measured at cost less accumulated amortisation charges and accumulated impairment losses. Other intangible assets are subject to impairment testing when there is an indication that an impairment loss may have been incurred and are amortised over their estimated useful lives.

(c) Research and development costs

The Group's research activity involves long-range, "blue sky" investigation, the findings from which may be used in the future to develop new or substantially improved products. Expenditure on research activities is recognised in the income statement as an expense in the year in which it is incurred.

Development is the application of research findings for the production of new or substantially improved products, processes and services before the start of commercial production. Development expenditure is capitalised only if the expenditure can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable and the Group intends to and has sufficient resources to complete development and to use or sell the asset. Otherwise, it is recognised in the income statement as an expense in the year in which it is incurred. Capitalised development expenditure, where there is any, is stated at cost less accumulated amortisation and impairment losses.

In determining whether development expenditure is capitalised as an intangible asset, management considers whether the strict intangible asset recognition criteria set out in IAS 38, Intangible Assets, have been met at the time the expenditure is incurred. In making this determination, management recognise that a significant amount of the development expenditure undertaken by the Group is focused on dealing with local customer technical support issues and incremental developments to existing products as opposed to new or substantially improved products, and that at the time the feasibility of the project is determined a significant proportion of the development expenditure for that project has already been incurred.

16.2 Movement in net book value

	Goodwill £m	**Other intangible assets £m**	**2016 total £m**	Goodwill £m	Other intangible assets £m	2015* total £m
Cost						
As at 1 January	**562.1**	**250.7**	**812.8**	561.4	255.9	817.3
Exchange adjustments	**97.0**	**17.4**	**114.4**	(12.1)	(5.2)	(17.3)
Business combinations (Note 21)	**3.1**	**3.8**	**6.9**	12.8	—	12.8
As at 31 December	**662.2**	**271.9**	**934.1**	562.1	250.7	812.8
Accumulated amortisation and impairment losses						
As at 1 January	**—**	**128.2**	**128.2**	—	113.4	113.4
Exchange adjustments	**—**	**6.9**	**6.9**	—	(1.8)	(1.8)
Amortisation charge for the year	**—**	**17.1**	**17.1**	—	16.6	16.6
As at 31 December	**—**	**152.2**	**152.2**	—	128.2	128.2
Net book value as at 31 December	**666.2**	**119.7**	**781.9**	562.1	122.5	684.6

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (Note 21).

16. Intangible Assets (continued)

16.3 Analysis of goodwill by cash-generating unit ('CGU')

Goodwill acquired in a business combination is allocated to each of the Group's CGUs expected to benefit from the synergies of the combination. For the purposes of impairment testing, the Directors consider that the Group has two CGUs: the Steel division and the Foundry division. These CGUs represent the lowest level within the Group at which goodwill is monitored.

	2016 £m	2015* £m
Steel	**438.7**	371.7
Foundry	**223.5**	190.4
Total goodwill	**662.2**	562.1

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (Note 21).

16.4 Analysis of other intangible assets

Other intangible assets are amortised on a straight-line basis over their estimated useful lives. The assets acquired and their remaining useful lives are shown below.

	Remaining useful life years	**Net book value as at 31 Dec 2016 £m**
Foseco		
— customer relationships (useful life: 20 years)	11.3	**64.8**
— trade name (useful life: 20 years)	11.3	**40.8**
— intellectual property rights (useful life: ten years)	1.3	**10.0**
Mould and tundish business of Carboox		
— customer relationships (useful life: 20 years)	19.9	**3.7**
— trade name (useful life: two years)	1.9	**0.4**
Total		**119.7**

17. Impairment of Tangible and Intangible Assets

17.1 Accounting policy

The Directors regularly review the performance of the business and the external business environment to determine whether there is any indication that the Group's tangible and intangible assets have suffered an impairment loss. If such indication exists, the higher of the value in use and the recoverable amount of the asset is estimated and compared to the carrying value in order to determine the extent, if any, of the impairment loss. Where it is not feasible to estimate the recoverable amount of an individual asset, the Directors estimate the recoverable amount of the CGU to which the asset belongs. In addition, goodwill is tested for impairment on an annual basis. Goodwill acquired in a business combination is allocated to each of the Group's CGUs expected to benefit from the synergies of the combination and the Directors carry out annual impairment testing of the carrying value of each CGU, to assess the need for any impairment of the carrying value of the associated goodwill and other intangible and tangible assets.

For the purpose of impairment testing, the recoverable amount of an asset or CGU is the higher of (i) its fair value less costs to sell and (ii) its value in use. If the recoverable amount of a CGU is less than its carrying amount, the resulting impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the CGU and then to the other assets of the CGU pro rata on the basis of the carrying amount of each asset in the CGU. An impairment loss recognised for goodwill is not reversed in a subsequent period. An impairment loss recognised in a prior year for an asset other than goodwill may be reversed where there has been a change in the estimates used to measure the asset's recoverable amount since the impairment loss was recognised.

Notes to the Consolidated Financial Statements
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17. Impairment of Tangible and Intangible Assets (continued)

17.2 Key assumptions

The key assumptions used in determining value in use are return on sales, growth rates and discount rates. Return on sales assumptions are based on historical financial information, adjusted to factor in the anticipated impact of restructuring and rationalisation plans already announced at the balance sheet date.

The value in use calculations of the Group's CGUs are based on three-year business plans and a terminal growth rate of 2.5% (2015: 2.5%). The cash flows are discounted to their current value using pre-tax discount rates, which represent each CGU's weighted average cost of capital ('WACC'). Growth rates are determined with reference to: current market conditions; external forecasts and historical trends for the Group's key end-markets of Steel and Foundry; and expected growth in output within the industries in which each major Group business unit operates. A perpetuity growth rate of 2.5% (2015: 2.5%) has been applied. The pre-tax discount rate is the WACC calculated for each CGU as at 31 December 2016 based on industry-specific beta coefficients for the industries in which the CGUs operate, risk-free rates, and equity risk premia related to the major countries in which the CGUs are located, selecting countries which contribute at least 80% of total CGU revenue. The pre-tax discount rate used for the Steel CGU was 10.9% (2015: 11.1%) and for the Foundry CGU was 13.2% (2015: 13.0%). The decrease in Steel's pre-tax discount rate is driven by a reduction in global risk free rates as reserve banks lower these to stimulate growth. In Foundry, the impact of this decrease has been more than offset by increasing contributions from emerging markets, providing upward pressure on beta and equity risk premiums. A sensitivity analysis undertaken in respect of the 2016 impairment testing assuming a 1.0% increase in each of the CGU discount rates and a 1.0% perpetuity growth rate still resulted in headroom remaining in which the recoverable amount of each CGU exceeded its carrying value. A pre-tax discount rate of 13.9% would result in an impairment of Steel intangible assets and 16.2% for Foundry.

17.3 Goodwill impairment

In assessing goodwill for potential impairment as at 31 December 2016, the Directors made use of detailed calculations of the recoverable amount of the Group's CGUs as at 31 December 2016. Those calculations resulted in recoverable amounts significantly higher than the carrying values of each of the Group's CGUs and consequently no impairment charges were recognised.

18. Trade and Other Receivables

18.1 Accounting policy

Trade and other receivables are initially recognised at fair value and subsequently measured at amortised cost, using the effective interest method, less impairment losses.

18.2 Analysis of trade and other receivables

		2016			2015*		
		Gross £m	**Impairment £m**	**Net £m**	Gross £m	Impairment £m	Net £m
Trade receivables	— current	**236.7**	**(1.1)**	**235.6**	189.3	(0.7)	188.6
	— 1 to 30 days past due	**51.3**	**(0.5)**	**50.8**	42.1	(0.8)	41.3
	— 31 to 60 days past due	**19.3**	**(0.2)**	**19.1**	15.9	(0.1)	15.8
	— 61 to 90 days past due	**9.5**	**(0.2)**	**9.3**	9.0	(0.7)	8.3
	— over 90 days past due	**52.8**	**(31.1)**	**21.7**	42.9	(24.8)	18.1
Trade receivables		**369.6**	**(33.1)**	**336.5**	299.2	(27.1)	272.1
Other receivables				**41.9**			30.4
Prepayments and accrued income				**14.8**			13.8
Total trade and other receivables*				**393.2**			316.3

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (Note 21).

All the Group's operating companies have policies and procedures in place to assess the creditworthiness of the customers with whom they do business. Where objective evidence exists that a trade receivable balance may be impaired, provision is made for the difference between its carrying amount and the present value of the estimated cash that will be recovered. Evidence of impairment may include such factors as the customer being in breach of contract, or entering bankruptcy or financial reorganisation proceedings. Impairment provisions are assessed on an individual customer basis for all significant outstanding balances and collectively for all remaining balances, based upon historical loss experience. Historical experience has shown that the Group's trade receivable provisions are maintained at levels that are sufficient to absorb actual bad debt write-offs, without being excessive.

18. Trade and Other Receivables (continued)

18.2 Analysis of trade and other receivables (continued)

In prior years under its non-recourse factoring arrangements, the Group sold trade receivables balances to a third-party factoring company in exchange for a cash payment from the factoring company, net of fees. All the risks and rewards of the trade receivables subject to these arrangements were transferred to the factoring company and, accordingly, the trade receivables were derecognised in the Group balance sheet. Such arrangements were used from time to time by the Group to manage the recovery of cash from its trade receivables. As at 31 December 2016, the Group balance sheet included £nil (2015: £4.7m) of cash that would otherwise have been reported as trade receivables if these arrangements were not in place. The movement since the prior year of £4.7m is due to the retirement of the debt factoring programme. Factoring fees incurred during the year ended 31 December 2016, which are charged to the Group income statement within ordinary finance costs, amounted to £nil (2015: £0.2m).

18.3 Movements on impairment provisions

	2016 £m	2015 £m
As at 1 January	**27.1**	25.4
Charge for the year	**6.6**	5.0
Receivables written off during the year as uncollectable	**(4.4)**	(2.2)
Exchange adjustments	**3.8**	(1.1)
As at 31 December	**33.1**	27.1

The charge for the year shown in the table above is recorded within administration, selling and distribution costs in the Group income statement.

19. Inventories

19.1 Accounting policy

Inventories are stated at the lower of cost (using the first in, first out method) and net realisable value. Cost comprises expenditure incurred in purchasing or manufacturing inventories together with all other costs directly incurred in bringing the inventory to its present location and condition and, where appropriate, attributable production overheads based on normal activity levels. Net realisable value represents the estimated selling price less all estimated costs of completion and costs to be incurred in marketing, selling and distribution. The amount of any write-down of inventories to net realisable value is recognised as an expense in the year in which the write-down occurs.

19.2 Analysis of inventories

	2016 £m	2015* £m
Raw materials	**75.1**	63.2
Work-in-progress	**18.7**	13.4
Finished goods	**113.9**	91.1
Total inventories	**207.7**	167.7

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (Note 21).

The cost of inventories recognised as an expense and included in manufacturing costs of continuing operations in the income statement during the year was £636.0m (2015: £596.4m).

The net inventories of £207.7m includes a provision for obsolete stock of £14.4m (2015: £11.0m).

Notes to the Consolidated Financial Statements
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20. Derivative Financial Instruments

20.1 Accounting policy

The Group uses derivative financial instruments ('derivatives'), in the form of forward foreign currency contracts, and interest rate swaps to manage the effects of its exposure to foreign exchange risk, and interest rate risk. The way in which derivatives are used to manage the Group's financial risk is detailed in Note 27.

Derivatives are measured at fair value. The fair value of forward foreign currency contracts is calculated using market prices at the balance sheet date. The fair value of an interest rate swap is the estimated amount that the Group would receive or pay to terminate the swap at the balance sheet date, taking into account current interest rates and the creditworthiness of the swap counterparty.

The method of recognising the gain or loss on remeasurement to fair value depends on whether the derivative is designated as a hedging instrument for hedge accounting purposes and, if so, the nature of the item being hedged. Strict conditions have to be satisfied in order to qualify for hedge accounting, including a determination both at inception of the hedge and on an ongoing basis that the hedge is expected to be highly effective in achieving offsetting changes in fair values or cash flows attributable to the hedged risk. The change in fair value of a derivative that is not designated as a hedging instrument for hedge accounting purposes is recognised immediately in the Group income statement. No derivatives are held for speculative purposes.

Cash flow hedges

The effective part of any gain or loss on a derivative that is designated as a cash flow hedge is recognised in other comprehensive income and presented in the hedging reserve in equity. The ineffective part of any gain or loss is recognised immediately within trading profit, or within finance costs in the case of interest rate swaps designated as cash flow hedges. When the transaction that was being hedged is realised and affects profit or loss, the cumulative gain or loss on the derivative is removed from the hedging reserve and recognised in the income statement in the same period.

Fair value hedges

The change in fair value of a derivative that is designated as a fair value hedge is recognised within trading profit in the Group income statement. The carrying amount of the hedged item is adjusted by the change in its fair value that is attributable to the hedged risk and this adjustment is recognised within trading profit in the Group income statement.

Net investment hedges

The effective part of any gain or loss on a derivative that is designated as a hedge of a net investment in a foreign operation is recognised in other comprehensive income and presented in the translation reserve in equity, and is subsequently recognised in the Group income statement as part of the profit or loss on disposal of the net investment. The ineffective portion of the gain or loss is recognised immediately within trading profit in the Group income statement.

20.2 Analysis of derivative financial instruments

	2016		2015	
	Assets £m	**Liabilities £m**	Assets £m	Liabilities £m
Derivatives not designated for hedge accounting purposes	—	**(0.9)**	0.5	—
Total derivative financial instruments	—	**(0.9)**	0.5	—

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

21. Acquisition of Subsidiaries and Joint Ventures, Net of Cash Acquired

21.1 Current year acquisition

On 1 December 2016, the Group acquired a 100% ownership interest in Mastercodi Industrial Ltda, the mould and tundish flux business of Carboox, for total consideration of £8.0m, of which £0.7m was deferred. The fair value of the net assets acquired was £4.9m and included identified intangible assets relating to customer relationships and trade names of £3.8m. The transaction resulted in the recognition of £3.1m of goodwill attributable to the synergies which are expected from combining the business with the operations of the Group.

The £7.7m disclosed in the Group statement of cash flows in respect of the acquisitions of subsidiaries, net of cash acquired, comprised £7.3m paid for current year acquisitions and a £0.4m payment of contingent consideration payment for Process Metrix.

21. Acquisition of Subsidiaries and Joint Ventures, Net of Cash Acquired (continued)

21.2 Prior year acquisition

On 15 May 2015, the Group acquired a 100% ownership interest in the Sidermes Group ('Sidermes'), a leading supplier of temperature and chemical measurement solutions. The fair values of the acquired assets and liabilities disclosed as provisional in the 2015 Annual Report in respect of this acquisition have been finalised during the period. The following adjustments have been made, as at the date of acquisition:

Consideration transferred	Fair values previously disclosed £m	Adjustments made £m	Fair value of net assets acquired £m
Cash	24.4	—	24.4
Total consideration transferred	24.4	—	24.4

Identifiable assets acquired and liabilities assumed at fair value			
Inventories	6.7	(0.3)	6.4
Trade and other receivables	6.4	(0.3)	6.1
Property, plant and equipment	5.7	—	5.7
Cash	0.6	—	0.6
Trade and other payables	(3.7)	(0.2)	(3.9)
Deferred tax liability	(1.2)	—	(1.2)
Employee benefits net liabilities	(0.9)	—	(0.9)
Interest bearing borrowings	(0.8)	—	(0.8)
Provisions	(0.3)	(0.1)	(0.4)
Total identifiable net assets at fair value	12.5	(0.9)	11.6
Goodwill	11.9	0.9	12.8

22. Discontinued Operations

Discontinued operations income during 2016 of £10.2m, comprised a £9.0m tax credit relating to the release of a provision for possible China taxes (Note 10.2) and a £1.2m release of provisions no longer required. In 2015, discontinued operations income of £1.4m related to a partial reimbursement of costs charged in 2014 for the MacDermid claim.

The net cash outflow from discontinued operations of £6.2m during 2015 represented the net payment of £5.5m to MacDermid following the settlement agreement in 2014, £0.4m VAT payment, and £0.3m other payments.

22.1 Results of discontinued operations

	2016 £m	2015 £m
Other income	**10.2**	1.4
Profit before tax — attributable to owners of the parent	**10.2**	1.4
Earnings per share — pence		
Basic	**3.8**	0.5
Diluted	**3.7**	0.6

22.2 Cash flows from discontinued operations

	2016 £m	2015 £m
Net cash outflow from:		
— operating activities	—	(6.2)
Net cash outflow for the year	—	(6.2)

23. Issued Share Capital

23.1 Accounting policy

Equity instruments issued by the Company are recorded at the proceeds received, net of direct issue costs.

23.2 Analysis of issued share capital

The issued ordinary share capital of the Company as at 31 December 2016 was 278.5 million shares of £0.10 each. Further information relating to the Company's share capital is given in Note 7 attached to the Company's financial statements.

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24. Retained Earnings

	Reserve for own shares £m	Share option reserve £m	Other retained earnings £m	Total retained earnings £m
As at 1 January 2015	(33.6)	4.0	2,361.7	2,332.1
Profit for the year	—	—	48.8	48.8
Remeasurement of defined benefit liabilities/assets	—	—	13.0	13.0
Purchase of own shares	(5.2)	—	—	(5.2)
Disposal of own shares	0.8	—	(0.8)	—
Recognition of share-based payments	—	0.1	—	0.1
Release of share option reserve on exercised and lapsed options	—	(0.5)	0.5	—
Income tax on items recognised in other comprehensive income	—	—	1.6	1.6
Dividends paid (Note 26)	—	—	(43.9)	(43.9)
As at 1 January 2016	**(38.0)**	**3.6**	**2,380.9**	**2,346.5**
Profit for the year	**—**	**—**	**56.9**	**56.9**
Remeasurement of defined benefit liabilities/assets	**—**	**—**	**9.5**	**9.5**
Disposal of own shares	**2.9**	**—**	**(2.9)**	**—**
Recognition of share-based payments	**—**	**1.7**	**—**	**1.7**
Release of share option reserve on exercised and lapsed options	**—**	**(2.4)**	**2.4**	**—**
Income tax on items recognised in other comprehensive income	**—**	**—**	**(0.7)**	**(0.7)**
Dividends paid (Note 26)	**—**	**—**	**(43.9)**	**(43.9)**
As at 31 December 2016	**(35.1)**	**2.9**	**2,402.2**	**2,370.0**

25. Other Reserves

	Other reserves £m	Translation reserve £m	Total other reserves £m
As at 1 January 2015	(1,499.3)	32.6	(1,466.7)
Exchange differences on translation of the net assets of foreign operations	—	(29.1)	(29.1)
Exchange translation differences arising on net investment hedges	—	(6.1)	(6.1)
As at 1 January 2016	**(1,499.3)**	**(2.6)**	**(1,501.9)**
Exchange differences on translation of the net assets of foreign operations	**—**	**202.1**	**202.1**
Exchange translation differences arising on net investment hedges	**—**	**(41.6)**	**(41.6)**
As at 31 December 2016	**(1,499.3)**	**157.9**	**(1,341.4)**

Within other reserves as at 31 December 2016 is £1,499.0m (2015: £1,499.0m) arising from the demerger of Cookson Group plc, being the excess of the Vesuvius plc share capital of £1,777.9m over the total share capital and share premium of Cookson Group plc as at 14 December 2012 of £278.9m.

The translation reserve in the table above comprises all foreign exchange differences attributable to the owners of the parent. These exchange differences arise from the translation of the financial statements of foreign operations and from the translation of financial instruments that hedge the Group's net investment in foreign operations. In addition to foreign exchange differences attributable to the owners of the parent, the Group statement of comprehensive income includes foreign exchange differences attributable to non-controlling interests.

26. Dividends

A final dividend for the year ended 31 December 2015 of £30.0m (2014: £30.1m), equivalent to 11.125 pence (2014: 11.125 pence) per ordinary share, was paid in May 2016 (May 2015) and an interim dividend for the year ended 31 December 2016 of £13.9m (2015: £13.8m), equivalent to 5.15 pence (2015: 5.15 pence) per ordinary share, was paid in September 2016 (September 2015).

A proposed final dividend for the year ended 31 December 2016 of £30.8m, equivalent to 11.40 pence per ordinary share, is subject to approval by shareholders at the Company's Annual General Meeting and has not been included as a liability in these financial statements. If approved by shareholders, the dividend will be paid on 19 May 2017 to ordinary shareholders on the register at 7 April 2017.

27. Financial Risk Management

27.1 Accounting policy

(a) Non-derivative financial instruments

Loans and borrowings are initially recognised at fair value plus directly attributable transaction costs. After initial recognition they are measured at amortised cost, using the effective interest method.

(b) Foreign currencies

The individual financial statements of each Group entity are prepared in their functional currency, which is the currency of the primary economic environment in which that entity operates. For the purpose of the Consolidated Financial Statements, the results and financial position of each entity are translated into pound sterling, which is the presentational currency of the Group.

Reporting foreign currency transactions in functional currency

Transactions in currencies other than the entity's functional currency (foreign currencies) are initially recorded at the rates of exchange prevailing on the dates of the transactions. At each subsequent balance sheet date:

(i) Foreign currency monetary items are retranslated at the rates prevailing at the balance sheet date. Exchange differences arising on the settlement or retranslation of monetary items are recognised in the Group income statement

(ii) Non-monetary items measured at historical cost in a foreign currency are not retranslated.

Translation from functional currency to presentational currency

When the functional currency of a Group entity is different from the Group's presentational currency (pound sterling), its results and financial position are translated into the presentational currency as follows:

(i) Assets and liabilities are translated using exchange rates prevailing at the balance sheet date

(ii) Income and expense items are translated at average exchange rates for the year, except where the use of such average rates does not approximate the exchange rate at the date of a specific transaction, in which case the transaction rate is used

(iii) All resulting exchange differences are recognised in other comprehensive income and presented in the translation reserve in equity and are reclassified to profit or loss in the period in which the foreign operation is disposed of.

Net investment in foreign operations

Exchange differences arising on a monetary item that forms part of a reporting entity's net investment in a foreign operation are initially recognised in other comprehensive income and presented in the translation reserve in equity and reclassified to profit or loss on disposal of the net investment.

27.2 Financial risk factors

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.

(a) Market risk

Market risk is the risk that either the fair values or the cash flows of the Group's financial instruments may fluctuate because of changes in market prices. The Group is principally exposed to market risk through fluctuations in exchange rates ('currency risk') and interest rates ('interest rate risk').

Currency risk

The Group is exposed to currency risk on its borrowings and financial assets (being cash and short-term deposits) that are denominated in currencies other than pound sterling. The Group's general policy is proportionally to match the currency profile of its core borrowings with the currency profile of its earnings and net assets. This is achieved, where necessary, by the use of forward foreign exchange contracts ('FX swaps'). The currency profile of the Group's borrowings and financial assets, reflecting the effect of the FX swaps, is shown in the table overleaf.

Notes to the Consolidated Financial Statements *continued*

27. Financial Risk Management (continued)

27.2 Financial risk factors (continued)

(a) Market risk (continued)

	2016					2015				
	Borrowings before FX swaps £m	**FX swaps £m**	**Borrowings after FX swaps £m**	**Financial assets £m**	**Net debt £m**	Borrowings before FX swaps £m	FX swaps £m	Borrowings after FX swaps £m	Financial assets £m	Net debt £m
Sterling	**32.5**	**116.8**	**149.3**	**(9.2)**	**140.1**	21.3	97.0	118.3	(9.9)	108.4
United States dollar	**301.6**	**(116.8)**	**184.8**	**(40.7)**	**144.2**	232.1	(97.0)	135.1	(15.4)	119.7
Euro	**127.1**	**—**	**127.1**	**(22.6)**	**104.5**	134.2	—	134.2	(32.6)	101.6
Chinese renminbi	**—**	**—**	**—**	**(22.1)**	**(22.1)**	—	—	—	(5.6)	(5.6)
Other	**5.2**	**—**	**5.2**	**(49.9)**	**(44.7)**	7.7	—	7.7	(38.0)	(30.3)
Capitalised arrangement fees	**(1.7)**	**—**	**(1.7)**	**—**	**(1.7)**	(2.2)	—	(2.2)	—	(2.2)
As at 31 December	**464.7**	**—**	**464.7**	**(144.4)**	**320.3**	393.1	—	393.1	(101.5)	291.6

Based upon the currency profile shown in the table above, while not impacting reported profit, the change in net debt arising from a 10% strengthening of sterling would increase reported equity by £27.1m (2015: £25.7m) and a corresponding 10% weakening of sterling would reduce equity by £33.2m (2015: £31.4m).

The tables below show the net unhedged monetary assets and liabilities of Group companies that are not denominated in their functional currency and which could give rise to exchange gains and losses in the Group income statement.

	Net unhedged monetary assets/(liabilities)					
	Sterling £m	**US dollar £m**	**Euro £m**	**Renminbi £m**	**Other £m**	**Total £m**
Functional currency						
Sterling	**—**	**(0.9)**	**1.0**	**0.1**	**1.0**	**1.2**
United States dollar	**—**	**—**	**13.5**	**—**	**(3.6)**	**9.9**
Euro	**(0.2)**	**(3.2)**	**—**	**—**	**—**	**(3.4)**
Chinese renminbi	**(0.7)**	**5.4**	**(0.5)**	**—**	**(0.1)**	**4.1**
Other	**(0.5)**	**13.4**	**2.2**	**1.3**	**18.0**	**34.4**
As at 31 December 2016	**(1.4)**	**14.7**	**16.2**	**1.4**	**15.3**	**46.2**

	Net unhedged monetary assets/(liabilities)					
	Sterling £m	US dollar £m	Euro £m	Renminbi £m	Other £m	Total £m
Functional currency						
Sterling	—	1.2	2.8	0.7	2.8	7.5
United States dollar	0.1	—	1.8	—	2.1	4.0
Euro	(0.3)	(1.3)	—	—	0.2	(1.4)
Chinese renminbi	(0.1)	1.8	(0.8)	—	(0.7)	0.2
Other	(0.4)	8.4	7.2	(0.6)	5.8	20.4
As at 31 December 2015	(0.7)	10.1	11.0	0.1	10.2	30.7

Interest rate risk

The Group's interest rate risk principally arises in relation to its borrowings. Where borrowings are held at floating rates of interest, fluctuations in interest rates expose the Group to variability in the cash flows associated with its interest payments, and where borrowings are held at fixed rates of interest, fluctuations in interest rates expose the Group to changes in the fair value of its borrowings. The Group's policy is to maintain a mix of fixed and floating rate borrowings, within certain parameters agreed from time to time by the Board, in order to optimise interest cost and reduce volatility in reported earnings.

27. Financial Risk Management (continued)

27.2 Financial risk factors (continued)

(a) Market risk (continued)

As at 31 December 2016, the Group had $310m and €30m (£276.9m in total) of US Private Placement Loan Notes ('USPP') outstanding, which carry a fixed rate of interest, representing two-thirds of the Group's total borrowings outstanding at that date. The interest rate profile of the Group's borrowings and net debt is detailed in the tables below.

	Financial liabilities (gross borrowings)				
	Fixed rate £m	**Floating rate £m**	**Total £m**	**Financial assets £m**	**Net debt £m**
Sterling	—	**32.5**	**32.5**	**(9.2)**	**23.4**
United States dollar	**251.3**	**50.3**	**301.6**	**(40.7)**	**260.9**
Euro	**25.6**	**101.5**	**127.1**	**(22.6)**	**104.5**
Chinese renminbi	—	—	—	**(22.1)**	**(22.1)**
Other	—	**5.2**	**5.2**	**(49.9)**	**(44.7)**
Capitalised arrangement fees	**(1.7)**	—	**(1.7)**	—	**(1.7)**
As at 31 December 2016	**275.2**	**189.5**	**464.7**	**(144.4)**	**320.3**

	Financial liabilities (gross borrowings)				
	Fixed rate £m	Floating rate £m	Total £m	Financial assets £m	Net debt £m
Sterling	—	21.3	21.3	(9.9)	11.4
United States dollar	210.3	21.8	232.1	(15.4)	216.7
Euro	22.1	112.1	134.2	(32.6)	101.6
Chinese renminbi	—	—	—	(5.6)	(5.6)
Other	—	7.7	7.7	(38.0)	(30.3)
Capitalised arrangement fees	(2.2)	—	(2.2)	—	(2.2)
As at 31 December 2015	230.2	162.9	393.1	(101.5)	291.6

The floating rate financial liabilities shown in the tables above bear interest at the inter-bank offered rate of the appropriate currency, plus a margin. The fixed rate financial liabilities of £275.2m (2015: £230.2m) have a weighted average interest rate of 4.6% (2015: 4.6%) and a weighted average period for which the rate is fixed of 4.2 years (2015: 5.2 years). The financial assets attract floating rate interest at the inter-bank offered rate of the appropriate currency, less a margin.

Based upon the interest rate profile of the Group's financial assets and liabilities shown in the tables above, a 1% increase in market interest rates would increase both the net finance costs charged in the Group income statement and the net interest paid in the Group statement of cash flows by £0.5m (2015: £0.6m), and a 1% reduction in market interest rates would decrease both the net finance costs charged in the Group income statement and the net interest paid in the Group statement of cash flows by £0.5m (2015: £0.6m). Similarly, a 1% increase in market interest rates would result in a decrease of £10.7m (2015: £11.0m) in the fair value of the Group's net debt and a 1% decrease in market interest rates would result in an increase of £11.4m (2015: £11.8m) in the fair value of the Group's net debt.

(b) Liquidity risk

Liquidity risk is the risk that the Group might have difficulties in meeting its financial obligations. The Group manages this risk by ensuring that it maintains sufficient levels of committed borrowing facilities and cash and cash equivalents to ensure that it can meet its operational cash flow requirements and any maturing financial liabilities, whilst at all times operating within its financial covenants. The level of operational headroom provided by the Group's committed borrowing facilities is reviewed at least annually as part of the Group's three-year planning process. Where this process indicates a need for additional finance, this is normally addressed 12 to 18 months in advance by means of either additional committed bank facilities or raising finance in the capital markets.

As at 31 December 2016, the Group had committed borrowing facilities of £576.9m (2015: £532.4m), of which £158.3m (2015: £181.1m) were undrawn. These undrawn facilities are due to expire in June 2020. The Group's borrowing requirements are met by USPP and a multi-currency committed syndicated bank facility of £300m (2015: £300m). The USPP facility was fully drawn as at 31 December 2016 and amounted to £276.9m ($310m and €30m), of which $110m is repayable in 2017, $140m in 2020, €15m in 2021, $30m in 2023, €15m in 2025 and $30m in 2028. The syndicated bank facility is repayable in June 2020.

Notes to the Consolidated Financial Statements
continued

27. Financial Risk Management (continued)

27.2 Financial risk factors (continued)

(b) Liquidity risk (continued)

The maturity analysis of the Group's gross borrowings is shown in the tables below.

	Non-current		Current		Total	
	2016 £m	2015 £m	**2016 £m**	2015 £m	**2016 £m**	2015 £m
Loans and overdrafts	**329.4**	351.3	**132.7**	40.6	**462.1**	391.9
Obligations under finance leases	**2.6**	2.1	**1.7**	1.3	**4.3**	3.4
Capitalised arrangement fees	**(1.2)**	(1.7)	**(0.5)**	(0.5)	**(1.7)**	(2.2)
Total interest-bearing borrowings	**330.8**	351.7	**133.9**	41.4	**464.7**	393.1

	2016 £m	2015 £m
Interest-bearing borrowings repayable		
On demand or within one year	**134.4**	41.9
In the second year	**1.2**	75.7
In the third year	**0.9**	0.7
In the fourth year	**255.7**	0.2
In the fifth year	**12.8**	213.9
After five years	**61.4**	62.9
Capitalised arrangement fees	**(1.7)**	(2.2)
Total interest-bearing borrowings	**464.7**	393.1

Capitalised arrangement fees shown in the tables above, which have been recognised as a reduction in borrowings in the financial statements, amounted to £1.7m as at 31 December 2016 (31 December 2015: £2.2m), of which £0.7m (2015: £1.0m) related to the USPP and £1.0m (2015: £1.2m) related to the syndicated bank facility.

27.3 Capital management

The Company considers its capital to be equal to the sum of its total equity and net debt. It monitors its capital using a number of KPIs, including free cash flow, average working capital to sales ratios, net debt to EBITDA ratios and RONA (Note 4). The Group's objectives when managing its capital are:

> To ensure that the Group and all of its businesses are able to operate as going concerns and ensure that the Group operates within the financial covenants contained within its debt facilities

> To have available the necessary financial resources to allow the Group to invest in areas that may deliver acceptable future returns to investors

> To maintain sufficient financial resources to mitigate against risks and unforeseen events

> To maximise shareholder value through maintaining an appropriate balance between the Group's equity and net debt.

The Group operated within the requirements of its debt covenants throughout the year and has sufficient liquidity headroom within its committed debt facilities. Details of the Group's covenant compliance and committed debt facilities can be found in the Strategic Report on page 31.

27. Financial Risk Management (continued)

27.4 Cash pooling arrangements

The Group enters into notional cash pooling arrangements as part of its ongoing Treasury management activities. Certain cash pooling arrangements meet the criteria for offsetting as clarified in amendments to IAS 32 Financial Instruments, as regards a legally enforceable right of set off both in the ordinary course of business and in the event of default. The following tables set out the amounts of recognised financial assets and liabilities shown as cash and cash borrowings and those amounts which are subject to these agreements.

	Gross amounts of recognised financial assets/ liabilities £m	Gross amounts of recognised financial assets/ liabilities offset in the statement of financial position £m	Net amounts of financial assets/ liabilities presented in the statement of financial position £m	Related amounts of financial assets/ liabilities not offset in the statements of financial position £m	Net amount £m
Financial assets/liabilities					
Cash deposits	**160.8**	**(16.4)**	**144.4**	**(30.9)**	**113.5**
Cash borrowings	**(59.8)**	**16.4**	**(43.4)**	**30.9**	**(12.5)**
As at 31 December 2016	**101.0**	—	**101.0**	—	**101.0**
Financial assets/liabilities					
Cash deposits	120.5	(19.0)	101.5	(18.9)	82.6
Cash borrowings	(53.5)	19.0	(34.5)	18.9	(15.6)
As at 31 December 2015	67.0	—	67.0	—	67.0

28. Employee Benefits

28.1 Accounting policy

The net surplus or net liability recognised in the Group balance sheet for the Group's defined benefit plans is the present value of the defined benefit obligation at the balance sheet date, less the fair value of the plan assets. The defined benefit obligation is calculated by independent actuaries using the projected unit credit method and by discounting the estimated future cash flows using interest rates on high-quality corporate bonds that have terms to maturity approximating the terms of the related pension liability. Any asset recognised in respect of a surplus arising from this calculation is limited to the asset ceiling, where this is the present value of any economic benefits available in the form of refunds or reductions in future contributions in respect of the plans.

The expense for the Group's defined benefit plans is recognised in the Group income statement as shown in Note 28.8. Actuarial gains and losses arising on the assets and liabilities of the plans are reported within the Group statement of comprehensive income; and gains and losses arising on settlements and curtailments are recognised in the Group income statement in the same line as the item that gave rise to the settlement or curtailment or, if material, separately reported as a component of operating profit.

28.2 Group post-retirement plans

The Group operates a number of pension plans around the world, both of the defined benefit and defined contribution type, and accounts for them in accordance with IAS 19.

The Group's principal defined benefit pension plans are in the UK and the US, the benefits of which are based upon the final pensionable salaries of plan members. The assets of these plans are held separately from the Group in trustee-administered funds. The trustees are required to act in the best interests of the plans' beneficiaries. The principal risks faced by these plans comprise: (i) the risk that the value of the plan assets is not sufficient to meet all plan liabilities as they fall due; (ii) the risk that plan beneficiaries live longer than envisaged, causing liabilities to exceed the available plan assets; and (iii) the risk that the market-based factors used to value plan liabilities and assets change materially adversely to increase plan liabilities over the value of available plan assets. The Group also has defined benefit pension plans in other territories but, with the exception of those in Germany, these are not individually material in relation to the Group as a whole.

Notes to the Consolidated Financial Statements
continued

28. Employee Benefits (continued)

28.2 Group post-retirement plans (continued)

(a) Defined benefit pension plans – UK

The Group's main defined benefit pension plan in the UK ('the UK Plan') is closed to new members and to future benefit accrual. The existing plan was established under a trust deed and is subject to the Pension Act 2004 and guidance issued by the UK Pension Regulator.

A full actuarial valuation of the UK Plan is carried out every three years by an independent actuary for the UK Plan Trustee in line with the requirements of the Pension Act 2004, and the last full valuation was carried out as at 31 December 2015. At that date, the market value of plan assets was £536.7m and this represented a funding level of 102% of the accrued plan benefits at the time of £526.4m. Calculated on a 'buy-out' basis (using an estimation of the cost of buying out the UK Plan benefits with an insurance company), the liabilities at that date were £687.5m, representing a funding level of 78%.

Although there is no minimum funding requirement in the Pension Act 2004, under the rules of the UK Plan, the Trustee has the power to set the funding contributions taking into account the results of the triennial valuation, and after having consulted with the Company. Notwithstanding the latest funding valuation surplus, the Company has agreed to continue to make voluntary contributions at the rate of £2.0m per annum.

The value of the UK Plan liabilities as at 31 December 2016 increased to £527.4m (2015: £464.3m). The increase in the liabilities was driven mainly by the decrease in discount rates to 2.70% in 2016 (2015: 3.75%). Correspondingly, the UK Plan assets increased to £604.1m (2015: £522.0m) mainly driven by the increases in the values of the annuity insurance contract of £24.3m and the fixed income holdings of £54.3m. The insurance contract valuation has risen due to the reduction in interest rates noted above and offsets the UK plan losses. The increase in the fixed income holdings is attributable to the investment in fixed income UK Gilts, whose market value has risen due to lower interest rates and general market demand for low risk investments.

Proposed amendments to IFRIC 14, The Limit on a Defined Benefit Asset, Minimum Finding Requirements and their interaction, address how the powers of other parties, such as the trustees of the plan, affect an entity's right of refund of a surplus from the plan. The Group has assessed the likely impact of the application of the interaction and concluded that it would not impact its ability to continue to recognise a pension surplus.

(b) Defined benefit pension plans – US

The Group has a number of defined benefit pension plans in the US, providing retirement benefits based on final salary or a fixed benefit. The Group's principal US defined benefit pension plans are closed to new members and also to future benefit accrual for existing members. Actuarial valuations of the US defined benefit pension plans are carried out every year and the last full valuation was carried out as at 31 December 2016. At that date the market value of the plan assets was £49.2m, representing a funding level of 66% of funded accrued plan benefits at that date (using the projected unit method of valuation) of £74.3m. Funding levels for the Group's US defined benefit pension plans are normally based upon annual valuations carried out by independent qualified actuaries and are governed by US Government regulations. The value of US plan liabilities decreased to £86.8m (2015: £112.1m), which was mainly attributable to a buy-out of the majority of current pensioners that took place during the year which resulted in a £45.1m decrease in the liability. This significant decrease was partially offset by exchange losses of £17.5m and a loss of £4.4m due to the lower discount rate. The loss arising from changes in financial assumptions is solely attributable to the decrease in the discount rates to 3.8% (2015: 3.9%).

The Group's US defined benefit pension plans are subject to the minimum contribution requirements of Internal Revenue Code Sections 412 and 430. Contributions are determined by trustees, in consultation with the company, based on the annual valuations which are submitted to the Internal Revenue Service. For the plan year beginning 1 January 2016, the minimum required contribution was nil.

(c) Defined benefit pension plans – Germany

The Group has a number of defined benefit pension arrangements in Germany which are unfunded, as is common practice in that country. The main plan was closed to new entrants on 31 December 2016 and replaced by a defined contribution plan for new joiners. The net liability of the German plans at 31 December 2016 was £45.3m (2015: £36.3m). The increase was driven by the decrease in discount rate which resulted in an increase in the liability and exchange losses of £5.8m due to the strengthening of the euro against the pound. These increases were offset by a settlement of £3.5m, funded by a cash payment of £2.3m, after members were offered the opportunity of moving their existing plans into a new defined contribution plan.

(d) Defined benefit pension plans – ROW

The Group has a number of defined benefit pension arrangements across the rest of the world, the majority of which are located in Belgium. The net liability of the ROW plans at 31 December 2016 was £16.1m (2015: £13.3m). The increase was mainly attributable to exchange losses of £2.1m due to the weakening of the pound post-Brexit and significant services costs of £2.3m recognised in respect of the Belgian plans.

28. Employee Benefits (continued)

28.2 Group post-retirement plans (continued)

(e) Defined contribution pension plans

The total expense for the Group's defined contribution plans in the Group income statement amounted to £10.8m (2015: £10.7m continuing operations) and represents the contributions payable for the year by the Group to the plans.

(f) Multi-employer plans

Due to collective agreements, Vesuvius in the US participates together with other enterprises in union run multi-employer pension plans for temporary workers hired on sites. Some of these plans are underfunded and all participating employers are ultimately liable for any deficit. If a participating employer stops contributing to a plan it is required to make a withdrawal payment to the plan to cover its share of the total deficit in the plan. No reliable basis exists for allocation of the plans' obligations and plan assets to individual employer participants. Deficits in the plans may necessitate increased contributions in the future. These are currently accounted for as defined contribution plans. In 2016 Vesuvius contributed £1.2m (2015: £1.1m) to these plans.

28.3 Post-retirement liability valuation

The main assumptions used in calculating the costs and obligations of the Group's defined benefit pension plans, as detailed below, are set by the Directors after consultation with independent professionally qualified actuaries.

(a) Mortality assumptions

The mortality assumptions used in the actuarial valuations of the Group's UK, US and German defined benefit pension liabilities are summarised in the table below and have been selected to reflect the characteristics and experience of the membership of those plans.

For the UK Plan, the assumptions used have been derived from the Self-Administered Pension Schemes ('SAPS') All table, with future longevity improvements in line with the 'core' mortality improvement tables published in 2016 by the Continuous Mortality Investigation ('CMI'), with a long-term rate of improvement of 1.25% per annum. For the Group's US plans, the assumptions used have been based on the standard RP-2016 fully generational tables with projection scale BB, and the MP-2016 mortality improvement scale. The Group's major plans in Germany have been valued using the Heubeck Richttafeln 2005G mortality tables. In respect of the life expectancy tables below, current pensioners are assumed to be 65 years old; while future pensioners are assumed to be 45 years old.

		2016			2015		
Life expectancy of pension plan members		**UK years**	**US years**	**Germany years**	UK years	US years	Germany years
Age to which current pensioners are expected to live	— Men	**86.5**	**85.8**	**84.1**	87.7	86.2	84.0
	— Women	**89.2**	**87.8**	**88.2**	90.0	88.2	88.1
Age to which future pensioners are expected to live	— Men	**87.8**	**87.4**	**86.8**	89.0	87.9	86.6
	— Women	**90.7**	**89.4**	**90.7**	92.3	89.9	90.6

(b) Other main actuarial valuation assumptions

		2016			2015		
		UK % p.a.	**US % p.a.**	**Germany % p.a.**	UK % p.a.	US % p.a.	Germany % p.a.
Discount rate		**2.70**	**3.80**	**1.75**	3.75	3.90	2.60
Price inflation	— using RPI for UK	**3.30**	**2.25**	**1.70**	3.35	2.25	1.75
	— using CPI for UK	**2.20**	**n/a**	**n/a**	2.25	n/a	n/a
Rate of increase in pensionable salaries		**n/a**	**n/a**	**2.45**	n/a	n/a	2.50
Rate of increase to pensions in payment		**3.15**	**n/a**	**1.55**	3.20	n/a	1.60

The discount rate used to determine the liabilities of the UK Plan for IAS 19 accounting purposes is required to be determined by reference to market yields on high-quality corporate bonds. The UK discount rate in the above table is based on the Aon Hewitt AA-rated corporate bond yield in conjunction with the most recent projected cash flow data relating to the UK Plan liabilities; the US discount rate is based on the Citigroup pension discount curve; and the Germany discount rate is based on the yield on the iBoxx over ten-year euro corporates AA index.

The assumptions for UK price inflation are set by reference to the difference between yields on longer-term conventional government bonds and index-linked bonds, except for CPI, for which no appropriate bonds exist, which is assumed to be 1.1 points lower (2015: 1.1 points lower) than RPI-based inflation.

Notes to the Consolidated Financial Statements
continued

28. Employee Benefits (continued)

28.3 Post-retirement liability valuation (continued)

(c) Sensitivity analysis of the impact of changes in significant IAS 19 actuarial assumptions

The following table analyses, for the Group's main UK, US and Germany pension plans, the theoretical estimated impact on plan liabilities and assets resulting from changes to the most significant actuarial assumptions used for IAS 19 valuation purposes, whilst holding all other assumptions constant.

Following the arrangement of buy-in agreements for the UK plan pensioner liabilities in 2012, as noted above, and the fact that US pensions are not inflation linked, the rate of increase in pensionable salaries and of pensions in payment is not significant to the valuation of the Group's overall pension liabilities.

As stated above, during 2012 the UK Plan entered into pension insurance buy-in agreements which eliminate the inflation, interest rate, investment and longevity risk in respect of the pensioner liabilities covered by the agreements. Therefore, for the liabilities so covered, which represent some 47.9% of the total liabilities of the UK Plan, any changes in the valuation assumptions which impact on the value of those liabilities, also impact on the associated annuity assets in an equal and opposite way, thereby fully mitigating the valuation risk. This is also reflected in the following table.

Assumption	Change in assumption	UK	US	Germany
Discount rate	Increase/decrease by 0.1%			
	— impact on plan liabilities	Decrease/increase by £8.5m	Decrease/increase by £1.1m	Decrease/increase by £0.9m
	— impact on plan assets	Decrease/increase by £3.2m	n/a	n/a
Price inflation	Increase/decrease by 0.1%			
	— impact on plan liabilities	Increase/decrease by £5.7m	n/a	Increase/decrease by £0.3m
	— impact on plan assets	Increase/decrease by £2.2m	n/a	n/a
Mortality	Increase by one year			
	— impact on plan liabilities	Increase by £25.7m	Increase by £2.9m	Increase by £1.5m
	— impact on plan assets	Increase by £17.4m	n/a	n/a

28.4 Defined benefit obligation

The average duration of the obligations to which the liabilities of the Group's principal pension plans relate is 18 years for the UK, 17 years for Germany and 11 years for the US.

	Defined benefit pension plans					Other post-retirement benefit plans	
	UK £m	**US £m**	**Germany £m**	**ROW £m**	**Total £m**	**£m**	**Total £m**
Present value as at 1 January 2016	**464.3**	**112.1**	**36.3**	**36.1**	**648.8**	**5.7**	**654.5**
Exchange differences	—	**17.6**	**5.8**	**6.0**	**29.4**	**0.6**	**30.0**
Current service cost	—	**0.5**	**1.2**	**3.1**	**4.8**	**0.1**	**4.9**
Past service cost	—	—	—	**0.2**	**0.2**	**0.1**	**0.3**
Interest cost	**17.6**	**4.6**	**0.9**	**0.8**	**23.9**	**0.2**	**24.1**
Settlements	—	**(45.1)**	**(3.5)**	**(1.5)**	**(50.1)**	—	**(50.1)**
Remeasurement of liabilities:							
— demographic changes	**(12.3)**	**(1.2)**	—	—	**(13.5)**	—	**(13.5)**
— financial assumptions	**76.2**	**4.4**	**5.8**	**0.6**	**87.0**	**0.4**	**87.4**
— experience losses/(gains)	**9.7**	**(0.4)**	**0.1**	—	**9.4**	**0.5**	**9.9**
Benefits paid	**(28.1)**	**(5.7)**	**(1.3)**	**(4.3)**	**(39.4)**	**(0.7)**	**(40.1)**
Present value as at 31 December 2016	**527.4**	**86.8**	**45.3**	**41.0**	**700.5**	**6.9**	**707.4**

28. Employee Benefits (continued)

28.4 Defined benefit obligation (continued)

	Defined benefit pension plans					Other post-retirement benefit plans	
	UK £m	US £m	Germany £m	ROW £m	Total £m	£m	Total £m
Present value as at 1 January 2015	506.3	111.8	39.9	40.7	698.7	5.4	704.1
Exchange differences	—	6.1	(2.1)	(1.3)	2.7	(0.1)	2.6
Current service cost	—	0.5	1.3	3.1	4.9	0.2	5.1
Past service cost	0.8	—	—	—	0.8	—	0.8
Interest cost	17.4	4.1	0.8	0.7	23.0	0.2	23.2
Settlements	—	—	—	—	—	(0.2)	(0.2)
Acquisitions	—	—	—	0.5	0.5	0.9	1.4
Remeasurement of liabilities:							
— demographic changes	0.1	(2.2)	—	0.1	(2.0)	—	(2.0)
— financial assumptions	(19.1)	(2.6)	(2.6)	(0.6)	(24.9)	(0.1)	(25.0)
— experience (gains)/losses	(9.0)	0.4	—	(2.8)	(11.4)	0.2	(11.2)
Contributions from members	—	—	—	—	—	—	—
Benefits paid	(32.2)	(6.0)	(1.0)	(4.3)	(43.5)	(0.8)	(44.3)
Present value as at 31 December 2015	464.3	112.1	36.3	36.1	648.8	5.7	654.5

28.5 Fair value of plan assets

	2016				2015			
	UK £m	**US £m**	**ROW £m**	**Total £m**	UK £m	US £m	ROW £m	Total £m
As at 1 January	**522.0**	**74.4**	**22.8**	**619.2**	555.1	76.2	21.7	653.0
Exchange differences	**—**	**10.8**	**4.0**	**14.8**	—	4.1	(0.5)	3.6
Interest income	**19.3**	**3.1**	**0.4**	**22.8**	19.1	2.8	0.4	22.3
Settlements	**—**	**(41.6)**	**(1.0)**	**(42.6)**	—	—	(0.2)	(0.2)
Acquisitions	**—**	**—**	**—**	**—**	—	—	0.5	0.5
Remeasurement of assets	**89.7**	**3.4**	**0.2**	**93.3**	(21.7)	(4.2)	0.7	(25.2)
Contributions from employer	**2.0**	**4.4**	**2.4**	**8.8**	2.4	1.3	3.2	6.9
Contributions from members	**—**	**—**	**—**	**—**	—	—	—	—
Administration expenses paid	**(0.9)**	**(0.6)**	**—**	**(1.5)**	(0.7)	(0.6)	—	(1.3)
Benefits paid	**(28.0)**	**(4.8)**	**(4.0)**	**(36.8)**	(32.2)	(5.2)	(3.0)	(40.4)
As at 31 December	**604.1**	**49.1**	**24.8**	**678.0**	522.0	74.4	22.8	619.2

The Group's pension plans in Germany are unfunded, as is common practice in that country, and accordingly there are no assets associated with these plans.

28.6 Remeasurement of defined benefit liabilities/assets

	2016 total £m	2015 total £m
Remeasurement of liabilities:		
— demographic changes	**13.5**	2.0
— financial assumptions	**(87.4)**	25.0
— experience (losses)/gains	**(9.9)**	11.2
Remeasurement of assets	**93.3**	(25.2)
Total movement	**9.5**	13.0

The remeasurement of defined benefit liabilities and assets of £9.5m (2015: £13.5m) is recognised in the Group statement of comprehensive income.

Notes to the Consolidated Financial Statements *continued*

28. Employee Benefits (continued)

28.7 Balance sheet recognition

The amount recognised in the Group balance sheet in respect of the Group's defined benefit pension plans and other post-retirement benefit plans is analysed in the following tables, which all relate to continuing operations. All equity securities and bonds have quoted prices in active markets.

	Defined benefit pension plans					Other post-retirement benefit plans £m	2016 total £m
	UK £m	**US £m**	**Germany £m**	**ROW £m**	**Total £m**		
Equities	**73.8**	**10.0**	**—**	**2.6**	**86.4**	**—**	**86.4**
Bonds	**216.3**	**35.9**	**—**	**2.0**	**254.2**	**—**	**254.2**
Annuity insurance contracts	**289.6**	**—**	**—**	**16.3**	**305.9**	**—**	**305.9**
Other assets	**24.4**	**3.2**	**—**	**3.9**	**31.5**	**—**	**31.5**
Fair value of plan assets	**604.1**	**49.1**	**—**	**24.8**	**678.0**	**—**	**678.0**
Present value of funded obligations	**(525.5)**	**(74.3)**	**—**	**(37.3)**	**(637.1)**	**—**	**(637.1)**
	78.6	**(25.2)**	**—**	**(12.5)**	**40.9**	**—**	**40.9**
Present value of unfunded obligations	**(1.9)**	**(12.5)**	**(45.3)**	**(3.7)**	**(63.4)**	**(6.9)**	**(70.3)**
Total net surpluses/(liabilities)	**76.7**	**(37.7)**	**(45.3)**	**(16.2)**	**(22.5)**	**(6.9)**	**(29.4)**
Recognised in the Group balance sheet as:							
Net surpluses	**78.6**	**—**	**—**	**0.2**	**78.8**	**—**	**78.8**
Net liabilities	**(1.9)**	**(37.7)**	**(45.3)**	**(16.4)**	**(101.3)**	**(6.9)**	**(108.2)**
Total net surpluses/(liabilities)	**76.7**	**(37.7)**	**(45.3)**	**(16.2)**	**(22.5)**	**(6.9)**	**(29.4)**

Based on a detailed assessment performed, none of the IFRIC 14 restrictions are applicable and; therefore, the surplus is recognised.

	Defined benefit pension plans					Other post-retirement benefit plans £m	2015 total £m
	UK £m	US £m	Germany £m	ROW £m	Total £m		
Equities	67.0	14.5	—	2.2	83.7	—	83.7
Bonds	162.0	52.7	—	1.4	216.1	—	216.1
Annuity insurance contracts	265.3	—	—	15.8	281.1	—	281.1
Other assets	27.7	7.2	—	3.4	38.3	—	38.3
Fair value of plan assets	522.0	74.4	—	22.8	619.2	—	619.2
Present value of funded obligations	(462.5)	(101.6)	—	(33.2)	(597.3)	—	(597.3)
	59.5	(27.2)	—	(10.4)	21.9	—	21.9
Present value of unfunded obligations	(1.8)	(10.5)	(36.3)	(2.9)	(51.5)	(5.7)	(57.2)
Total net surpluses/(liabilities)	57.7	(37.7)	(36.3)	(13.3)	(29.6)	(5.7)	(35.3)
Recognised in the Group balance sheet as:							
Net surpluses	59.5	—	—	0.4	59.9	—	59.9
Net liabilities	(1.8)	(37.7)	(36.3)	(13.7)	(89.5)	(5.7)	(95.2)
Total net surpluses/(liabilities)	57.7	(37.7)	(36.3)	(13.3)	(29.6)	(5.7)	(35.3)

(a) UK Plan asset allocation

As at 31 December 2016, of the UK Plan's total assets, 47.9% were represented by the annuity insurance contracts covering the UK Plan's pension liabilities; 12.2% were allocated to equities; 35.8% to fixed income securities; 1.8% to cash; and 2.3% to other assets. In addition, the UK Plan holds a liability driven investment portfolio of financial derivative contracts which reduces the risk that the UK Plan's assets would fall materially, relative to the value of its economic liabilities.

The UK Plan Trustee has entered into a pension insurance buy-in agreement with the Pension Insurance Corporation ('PIC'), whereby the UK Plan Trustee has paid insurance premiums to PIC to insure a significant portion of the UK Plan's liabilities. Under this arrangement, the value of the PIC insurance contract matches the value of the liabilities because the inflation, interest rate, investment and longevity risk for Vesuvius in respect of these liabilities are eliminated. As at 31 December 2016, the IAS 19 valuation of the PIC insurance contract value associated with the bought-in liabilities was £289.6m (2015: £265.3m). The buy-in agreement ensures that the UK pension plan obligations in respect of all its retired members and their approved dependants are insured. The policy and the associated valuation are updated annually to reflect retirements and mortality. In the current year, the agreement based on specific membership data covers 55% of UK pension plan obligations, removing all financial risks associated with this tranche of the liability.

28. Employee Benefits (continued)

28.7 Balance sheet recognition (continued)

(b) Defined benefit contributions in 2017

In 2017, the Group is expected to make contributions into its defined benefit pension and other post-retirement benefits plans of around £9.4m with specific contributions of £4.9m and £2.0m anticipated for the US and UK Plans respectively.

28.8 Income statement recognition

The expense recognised in the Group income statement in respect of the Group's defined benefit retirement plans and other post-retirement benefit plans is shown below.

	2016			2015		
	Defined benefit pension plans £m	**Other post-retirement benefit plans £m**	**Total £m**	Defined benefit pension plans £m	Other post-retirement benefit plans £m	Total £m
Current service cost	**4.8**	**0.1**	**4.9**	4.9	0.2	5.1
Past service cost	**0.2**	**0.1**	**0.3**	0.8	—	0.8
Settlements	**(5.2)**	**—**	**(5.2)**	—	—	—
Administration expenses	**1.5**	**—**	**1.5**	1.3	—	1.3
Net interest cost	**1.1**	**0.2**	**1.3**	0.7	0.2	0.9
Total net charge	**2.4**	**0.4**	**2.8**	7.7	0.4	8.1

The settlement gain of £5.2m (2015: £nil) which arose during the year principally related to the buy-out of members of the US plan and German members moving their existing plans into a new defined contribution plan. These settlements reduced the Group's defined benefit obligations by £50.1m, effected by utilising £42.6m of pension assets and additionally, in respect of the unfunded German plan, £2.3m of the Group's cash.

The total net charge of £2.8m (2015: £8.1m) recognised in the Group income statement in respect of the Group's defined benefit pension plans and other post-retirement benefits plans is recognised in the following lines:

		2016 £m	2015 £m
In arriving at trading profit	— within other manufacturing costs	**2.0**	2.1
	— within administration, selling and distribution costs	**4.4**	4.3
In arriving at profit before tax	— within restructuring charges	**0.3**	0.8
	— gain on employee benefit plan	**(5.2)**	—
	— within net finance costs	**1.3**	0.9
Total net charge		**2.8**	8.1

29. Share-based Payments

29.1 Income statement recognition

The total expense recognised in the Group income statement is shown below.

	2016 £m	2015 £m
Long Term Incentive Plan	**1.0**	(0.6)
Other plans	**0.7**	0.7
Total expense	**1.7**	0.1

The Group operates a number of different share-based payment plans, the most significant of which is the Long Term Incentive Plan ('LTIP'), details of which can be found between pages 94 to 96 of the Directors' Remuneration Report. The Group's other share-based payment plans are not considered significant in the context of the Group's results or financial position.

Notes to the Consolidated Financial Statements *continued*

29. Share-based Payments (continued)

29.2 Details of outstanding options

	Outstanding awards				
	As at 1 Jan 2016 no.	**Granted no.**	**Exercised no.**	**Forfeited/ lapsed no.**	**As at 31 Dec 2016 no.**
LTIP	**1,585,838**	**1,211,928**	**—**	**(399,581)**	**2,398,185**
Weighted average exercise price	**nil**	**nil**	**nil**	**nil**	**nil**
Other plans	**743,666**	**86,867**	**(607,139)**	**(3,915)**	**219,479**
Weighted average exercise price	**nil**	**nil**	**nil**	**nil**	**nil**

For the options exercised during 2016, the share price at the date of exercise ranged from 287 pence to 347 pence.

	Outstanding awards				
	As at 1 Jan 2015 no.	Granted no.	Exercised no.	Forfeited/ lapsed no.	As at 31 Dec 2015 no.
LTIP	1,882,498	773,096	(137,340)	(932,416)	1,585,838
Weighted average exercise price	nil	nil	nil	nil	nil
Other plans	604,847	188,654	(18,221)	(31,614)	743,666
Weighted average exercise price	nil	nil	nil	nil	nil

For the options exercised during 2015, the share price at the date of exercise was 517 pence for LTIP schemes and 333 or 354 pence for other plans.

	2016			2015		
	Awards exercisable as at 31 Dec 2016 no.	**Weighted average outstanding contractual life of awards years**	**Range of exercise prices pence**	Awards exercisable as at 31 Dec 2015 no.	Weighted average outstanding contractual life of awards years	Range of exercise prices pence
LTIP	**—**	**5.2**		—	5.9	
Weighted average exercise price	**—**		**n/a**	—		n/a
Other plans	**—**	**0.4**		33,220	0.5	
Weighted average exercise price	**—**		**n/a**	—		n/a

29.3 Options granted under the LTIP during the year

	2016		2015	
	EPS element	**TSR element**	EPS element	TSR element
Fair value of options granted (per share)	**292p**	**112p**	491p	275p
Share price on date of grant (per share)	**292p**	**292p**	491p	491p
Expected volatility	**n/a**	**26%**	n/a	24%
Risk-free interest rate	**n/a**	**0.4%**	n/a	0.62%
Exercise price (per share)	**nil**	**nil**	nil	nil
Expected term (years)	**4**	**4**	4	4
Expected dividend yield	**nil**	**nil**	n/a	n/a

The fair value of share options with non-market performance conditions has been calculated using the Black-Scholes option pricing model. The fair value of options with market-related performance conditions are measured using the Monte Carlo model. Expected volatility was determined by calculating the historical volatility of the group's share price over the 2.75 years (2015: 2.25 years) prior to the grant date. The risk free rate of return was assumed to be the yield to maturity on a UK fixed gilt with the term to maturity equal to the expected life of the option. At the discretion of the Remuneration Committee, award holders receive the value of dividends that would have been paid on their vested shares in the period between grant and vesting. Accordingly, there is no discount to the valuation for dividends foregone during the vesting period.

30. Trade and Other Payables

30.1 Accounting policy

Trade and other payables are initially recognised at fair value and subsequently measured at amortised cost, using the effective interest method.

30.2 Analysis of trade and other payables

	2016 £m	2015* £m
Non-current		
Accruals and other payables	**12.6**	14.4
Deferred purchase and contingent consideration	**3.9**	2.6
Total non-current other payables	**16.5**	17.0
Current		
Trade payables	**139.1**	104.1
Other taxes and social security	**32.3**	27.4
Deferred purchase and contingent consideration	**0.8**	0.5
Accruals and other payables	**60.5**	46.2
Total current trade and other payables	**232.7**	178.2

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (Note 21).

There is no significant difference between the fair value of the Group's trade and other payables balances and the amount at which they are reported in the Group balance sheet.

31. Leases

31.1 Accounting policy

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases. Rentals payable under operating leases are charged to the income statement on a straight-line basis over the term of the lease. Benefits received and receivable as an incentive to enter into an operating lease are also spread on a straight-line basis over the lease term.

31.2 Operating lease commitments

The future aggregate minimum lease payments under non-cancellable operating leases are payable as follows:

	2016 £m	2015* £m
Not later than one year	**9.0**	9.0
Later than one year and not later than five years	**15.8**	17.2
Later than five years	**7.0**	7.7
Total operating lease commitments	**31.8**	33.9

* Restated to reflect the inclusion of previously omitted operating lease commitments totalling £9.7m at 31 December 2015. There is no effect on net assets or reported results for any period presented.

The Group's property, plant and equipment assets are either purchased outright or held under lease contracts. Where the terms of the lease transfer substantially all the risks and rewards of ownership of the asset to the Group, the asset is capitalised in the Group balance sheet and the corresponding liability to the lessor is recognised as a finance lease obligation. Where all the risks and rewards of ownership are not transferred to the Group, the lease is classified as an operating lease and neither the asset nor the corresponding liability to the lessor is recognised in the Group balance sheet. The net book value of the Group's property, plant and equipment assets held under finance lease contracts at 31 December 2016 was £4.7m (2015: £3.8m).

The cost incurred by the Group in the year in respect of assets held under operating leases, all of which was charged within trading profit, amounted to £12.4m (2015: £11.8m).

Notes to the Consolidated Financial Statements
continued

32. Provisions

32.1 Accounting policy

Provisions are recognised when the Group has a present obligation as a result of a past event and it is probable that the Group will be required to settle that obligation. Provisions are measured at the Directors' best estimate of the expenditure required to settle the obligation at the balance sheet date. Where the effect of the time value of money is material, provisions are discounted using a pre-tax discount rate that reflects both the current market assessment of the time value of money and the specific risks associated with the obligation. Where discounting is used, the increase in the provision due to the passage of time is recognised as a finance cost.

32.2 Analysis of provisions

	Disposal and closure costs £m	Restructuring charges £m	Other £m	Total £m
As at 1 January 2016*	**30.7**	**9.8**	**6.7**	**47.2**
Exchange adjustments	**4.9**	**1.3**	**0.7**	**6.9**
Charge to Group income statement	**0.2**	**24.1**	**10.7**	**35.0**
Unused amounts released to Group income statement	**(2.6)**	—	**(0.5)**	**(3.1)**
Adjustment to discount	**(0.3)**	**0.1**	—	**(0.2)**
Cash spend	**(1.4)**	**(16.8)**	**(10.7)**	**(28.9)**
Transferred from other balance sheet accounts	**1.7**	—	—	**1.7**
As at 31 December 2016	**33.2**	**18.5**	**6.9**	**58.6**

* Restated to reflect the amendments to the acquisition balance sheet of Sidermes SpA (Note 21).

Of the total provision balance as at 31 December 2016 of £58.6m (2015: £47.2m), £32.9m (2015: £29.5m) is recognised in the Group balance sheet within non-current liabilities and £25.7m (2015: £17.7m) within current liabilities.

The provision for disposal and closure costs includes the Directors' current best estimate of the costs to be incurred both in the fulfilment of obligations incurred in connection with former Group businesses, resulting from either disposal or closure, together with those related to the demolition and clean-up of closed sites. The provision comprises amounts payable in respect of known or probable costs resulting both from legal or other regulatory requirements, or from third-party claims, including claims relating to product liability. As the settlement of many of the obligations for which provision is made is subject to legal or other regulatory process, the timing of the associated cash outflows is subject to some uncertainty, but the majority of the amounts provided are expected to be utilised over the next ten years and the underlying estimates of costs are regularly updated to reflect changed circumstances with regard to individual matters.

Where insurance cover exists for any of these known or probable costs, a related asset is recognised in the Group balance sheet only when its value can be reliably measured by management. As at 31 December 2016, £14.9m (2015: £12.3m) was recorded in receivables in respect of associated insurance reimbursements, of which £12.1m (2015: £9.7m) is non-current.

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 Director's assessment of the value, timing or certainty of the costs or related amounts.

The provision for restructuring charges includes the costs of all of the Group's recognised initiatives to rationalise its operating activities. The balance of £18.5m as at 31 December 2016 comprises £2.7m in relation to onerous lease provisions in respect of leases terminating between one and seven years, and £15.8m in relation to expenditure on restructuring initiatives that have been announced which is expected to be paid out over the next year.

Other provisions comprise amounts payable in respect of known or probable costs resulting both from legal or other regulatory requirements, workers' compensation and medical claims, and from third-party claims. As the settlement of many of the obligations for which provision is made is subject to reasonable assumptions, legal or other regulatory process, the timing of the associated outflows is subject to some uncertainty, but the majority of amounts provided are expected to be utilised over the next five years and the underlying estimates of costs are regularly updated to reflect changed circumstances with regard to individual matters. During 2016 the Group recognised net charges of £10.2m (2015: £9.2m) in the income statement to provide for various litigation settlements and other claims.

33. Off-Balance Sheet Arrangements

In compliance with current reporting requirements, certain arrangements entered into by the Group in its normal course of business are not reported in the Group balance sheet. Of such arrangements, those considered material by the Directors are future lease payments in relation to assets used by the Group under non-cancellable operating leases (Note 31).

34. Contingent Liabilities

Guarantees given by the Group under property leases of operations disposed of amounted to £1.6m (2015: £1.7m). Details of guarantees given by the Company, on behalf of the Group, are given in Note 10 to the Company financial statements.

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. Reserves 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. 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 (see Note 32 for further information).

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.

35. Principal Subsidiaries and Joint Ventures

Details of the principal subsidiaries and joint ventures of Vesuvius plc and the countries in which they are incorporated are given in Note 5 to the Company financial statements, together with details of subsidiaries exempt from audit of their individual financial statements by virtue of Section 479A of the Companies Act 2006.

36. Related Parties

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

Company Balance Sheet
As at 31 December 2016

	Notes	2016 £m	2015 £m
Fixed assets			
Investment in subsidiaries	5	**1,778.0**	1,778.0
Total fixed assets		**1,778.0**	1,778.0
Current assets			
Debtors — amounts falling due within one year		**1.8**	2.5
Cash at bank and in hand		—	0.6
Total current assets		**1.8**	3.1
Creditors — amounts falling due within one year			
Bank overdraft		—	(0.2)
Other creditors	6	**(1,074.5)**	(1,030.4)
Net current liabilities		**(1,072.7)**	(1,027.5)
Total assets less current liabilities		**705.3**	750.5
Net assets		**705.3**	750.5
Equity capital and reserves			
Issued share capital	7	**27.8**	27.8
Retained earnings		**677.5**	722.7
Shareholders' funds — equity	8	**705.3**	750.5

Company number 8217766

The financial statements were approved and authorised for issue by the Directors on 2 March 2017 and signed on their behalf by:

François Wanecq
Chief Executive

Guy Young
Chief Financial Officer

Notes to the Company Financial Statements

1. Basis of Preparation

1.1 Basis of accounting

These financial statements have been prepared in accordance with Financial Reporting Standard 101 Reduced Disclosure Framework ('FRS 101'). The amendments to FRS 101 (2014/15 Cycle) issued in July 2015 and effective immediately have been applied.

In preparing these financial statements, the Company applies the recognition, measurement and disclosure requirements of International Financial Reporting Standards as adopted by the EU ('Adopted IFRSs'), but makes amendments where necessary in order to comply with the Companies Act 2006 and has set out below where advantage of the FRS 101 disclosure exemptions has been taken.

Under Section 408 of the Companies Act 2006 the Company is exempt from the requirement to present its own profit and loss account.

In the transition to FRS 101, the Company has applied IFRS 1 whilst ensuring that its assets and liabilities are measured in compliance with FRS 101. The transition to FRS 101 had no effect on the reported financial position, financial performance and cash flows of the Company.

In these financial statements, the Company has applied the exemptions available under FRS 101 in respect of the following disclosures:

> A cash flow statement and related notes
> Disclosures in respect of transactions with wholly owned subsidiaries
> Disclosures in respect of capital management
> The effects of new but not yet effective IFRSs
> Disclosures in respect of the compensation of key management personnel

The accounting policies set out below have, unless otherwise stated, been applied consistently to all periods presented in these financial statements.

1.2 Going concern

The Directors have a reasonable expectation that the Group and the Company have adequate resources to continue in operational existence for the foreseeable future. Accordingly, they continue to adopt a going concern basis in preparing the financial statements of the Group and the Company.

2. Employee Benefits Expense

Details of the Directors' remuneration are disclosed in the Directors' Remuneration Report on pages 79 to 98.

3. Audit and Non-Audit Fees

Amounts payable to KPMG LLP in relation to audit and non-audit fees are disclosed within Note 6 to the Consolidated Financial Statements.

4. Dividends

A proposed final dividend for the year ended 31 December 2016 of £30.8m (2015: £30.0m), equivalent to 11.40 pence per ordinary share (2015: 11.125 pence), is subject to approval by shareholders at the Company's Annual General Meeting and has not been included as a liability in these financial statements. If approved by shareholders, the dividend will be paid on 19 May 2017 to ordinary shareholders on the register at 7 April 2017.

Notes to the Company Financial Statements *continued*

5. Investment in Subsidiaries, Associates and Joint Ventures

5.1 Accounting policy

Shares in subsidiaries, associates and joint ventures are stated at cost less any impairment in value.

5.2 Analysis of investment in subsidiaries, associates and joint ventures

	Shares in subsidiaries £m
As at 1 January 2015	1,780.3
Reduction due to inter-company recharge of capital contributions	(2.3)
As at 1 January 2016 and 31 December 2016	**1,778.0**

The subsidiaries and joint ventures of Vesuvius plc and the countries in which they are incorporated are as follows. With the exception of Vesuvius Holding Limited, whose ordinary share capital was directly held by Vesuvius plc, the ordinary capital of the companies listed below was owned by a Vesuvius plc subsidiary as at 31 December 2016.

Company legal name	Registered office address	Jurisdiction
Advent Process Engineering Inc.	333 Prince Charles Drive, Welland, Ontario, L3B 5P4, Canada	Canada (Ontario)
Andreco-Hurll Refractory Services Pty Limited	40-46 Gloucester Boulevarde, Port Kembla, NSW, 2505, Australia	Australia
Avemis SAS	Saint Symphorien Sur Coise (69590) au 2, Hotel d'Entreprises, ZI Grange Eglise, France	France
BMI Refractory Services Inc.	116 Pine Street, 3rd floor, suite 320, Harrisburg, 17101, United States	US (Pennsylvania)
Brazil 1 Limited	165 Fleet Street, London, EC4A 2AE, England	England
Cookson Dominicana, SRL	Km 7 1/2, Autopista San Isidro, Edificio Modelo A, Zona Franca San Isidro, Santo Domingo Oeste, Dominican Republic	Dominican Republic
Cookson Investments (Jersey) Limited	Queensway House, Hilgrove Street, St Helier, JE1 1ES, Jersey	Jersey
Cookson Jersey Limited	13 Castle Street, St Helier, Jersey, JE4 5UT, Jersey	Jersey
East Moon Investment (HK Holding) Company Limited	6/F Tower Two Times Square, 1 Matheson Street, Causeway Bay, Hong Kong	Hong Kong
ECIL MET TEC LTDA.	Blocks 1 and 2, No. 2001, Rua Benjamin da Silveira Baldy, City of Piedade, São Paulo, 18.170-000, Brazil	Brazil
Flo-Con Holding, Inc.	CT Corporation, 1209 Orange Street, The Corporation Trust Company, Wilmington, Delaware, 19801, United States	US (Delaware)
Flo-Con Systems, LLC	CT Corporation, 208 South LaSalle Street, Chicago, Cook County, Illinois, IL 60604, United States	US (Illinois)
Foseco (FS) Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, United Kingdom	England
Foseco (GB) Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco (Jersey) Limited	44 Esplanade, St Helier, Jersey	Jersey
Foseco (MRL) Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco (RUL) Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco (UK) Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Canada Limited	181 Bay Street, Suite 1800, Toronto, Ontario, M5J 2T9, Canada	Canada (Ontario)
Foseco Espanola SA	5, Barrio Elizalde, Izurza, Bizkaia, 48213, Spain	Spain
Foseco Foundry (China) Limited	Room 819, Shekou Zhaoshang building, Nanshan District, Shenzhen, China	China
Foseco Fundición Holding (Espanola), S.L.	5, Barrio Elizalde, Izurza, Bizkaia, 48213, Spain	Spain
Foseco Holding (Europe) Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Holding (South Africa) (Pty) Limited	12, Bosworth Street, Alrode, Aberton, 1449, South Africa	South Africa
Foseco Holding BV	165 Fleet Street, London, EC4A 2AE, England	Netherlands
Foseco Holding International Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Holding Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Industrial e Comercial Ltda	Km 15, Rodovia Raposo Tavares, Butanta Cep, São Paulo, 05577-100, Brazil	Brazil
Foseco International Holding (Thailand) Limited	170/69, 22nd Floor Ocean Tower 1, Ratchadapisek Road, Klongtoey, Bangkok, 10110, Thailand	Thailand
Foseco International Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, United Kingdom	England
Foseco Japan Ltd	9th Floor, Orix Kobe Sannomiya Building, 6-1-10, Goko dori, Chuo-ku, Kobe Hyogo, 651-0087, Japan	Japan
Foseco Korea Limited	74 Jeongju-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, 14523, South Korea	South Korea
Foseco Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Metallurgical Inc	CT Corporation, 1209 Orange Street, The Corporation Trust Company, Wilmington, Delaware, 19801, United States	US (Delaware)
Foseco Nederland BV	Binnenhavenstraat 20, 7553 GJ Hengelo (OV), Netherlands	Netherlands
Foseco Overseas Limited	165 Fleet Street, London, EC4A 2AE, England	England

Company legal name	Registered office address	Jurisdiction
Foseco Pension Fund Trustee Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Philippines Inc	Unit 401, 4th Floor 8 Antonio Centre, Prime St. Madrigal Business Park 2, Ayala Alabang Muntinlupa City, Philippines	Philippines
Foseco Portugal Productos para Fundição Lda	Rua 25 de Abril, Lote 3, Aveleda – 4485-010 CD, Vila do Conde, Portugal	Portugal
Foseco Pty Limited	7, Stuart Street, Padstow, NSW 2211, Australia	Australia
Foseco SAS	Le Newton C, 7 Mail Barthélémy Thimonnier, 77185 Lognes, France	France
Foseco Steel (Holdings) China Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Steel (UK) Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, United Kingdom	England
Foseco Technology Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Transnational Limited	165 Fleet Street, London, EC4A 2AE, England	England
Foseco Vietnam Limited	R 717.1, Me linh point Tower, no 2 ngo Duc ke, Ben Nghe Ward, Dist 1, Ho Chi Minh, Viet Nam	Vietnam
HGAC Participações Limitada	Street Duque de Caxias, 563 Room 2, Centro, Barueri, SP, 06401-010, Brazil	Brazil
ISID Limited	Greyfriars Court, Paradise Square, Oxford, OX1 1BE, England	England
J.H. France Refractories Company	CT Corporation, 1209 Orange Street, The Corporation Trust Company, Wilmington, Delaware, 19801, United States	US (Delaware)
John G. Stein & Company Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, United Kingdom	England
Mainsail Insurance Company Limited	Canon's Court, 22 Victoria Street, Hamilton, HM 12, Bermuda	Bermuda
Mascinco Empreendimentos e Participações Ltda	Avenida Brasil, 49550 - parte, Distrito Industrial de Palmares – Campo, Grande – Cep: 23065-480, Rio de Janeiro, RJ, Brazil	Brazil
MASTERCODI INDUSTRIAL LTDA.	Avenida Giovanni Gronchi, 5174, suíte 11, Vila Andrade, 05724-002, São Paulo, State of São Paulo, Brazil	Brazil
Mercajoya, S.A.	Capitán Haya, 56 - 1ºH, 28020 Madrid, Spain	Spain
Metal Way Equipamentos Metalurgicos Ltda	Estrada Santa Isabel, 7655 KM37, Bairro Do Una, Itaquaquecetuba, São Paulo – SP, CEP: 08580 000, Brazil	Brazil
Micro Jewels Limited	10 Frere Felix De Valois Street, Port Louis, Mauritius	Mauritius
Minerals Separation Limited	165 Fleet Street, London, EC4A 2AE, England	England
New Foseco (UK) Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, United Kingdom	England
Premier Refractories (Belgium) S.A.	17 Rue de Douvrain, Ghlin, 7011, Belgium	Belgium
Process Metrix, LLC	6622 Owens Drive, Pleasanton, California, 94588, United States	US (California)

Company legal name	Registered office address	Jurisdiction
PROLAN S.r.l. a Socio Unico	Via Oslavia 94, 20832 Desio (MB), Italy	Italy
PT Foseco Indonesia	2/5, Jalan Rawagelam, Kawasan Industry, Pulogadung, Jakarta Timur, 13930, Indonesia	Indonesia
PT Foseco Trading Indonesia	Jalan Rawagelam 2 No 5, Kawasan Industri Pulo Gadung, Jakarta Timur, 13930	Indonesia
Realisations 789, LLC	CT Corporation, 1209 Orange Street, The Corporation Trust Company, Wilmington, Delaware, 19801, United States	US (Delaware)
S G Blair & Company Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, England	England
S.G.E.A. S.r.l. a Socio Unico	Via Mantova 10, 20835 Muggiò (MB), Italy	Italy
SERT-Metal SAS	3, Avenue de l'Europe, Parc, 'Les Pivolles', Decines-Charpieu, 69150, France	France
SIDERMES Inc.	175, Calixa-Lavallée Verchêres, Québec J0L2R0, Canada	Canada
SIDERMES Latinoamericana CA	Zona Industrial, San Vicente Av., Anton Phillips Grupo Industrial, San Vicente Local 4, Maracay, Venezuela	Venezuela
SIDERMES S.A.	Urquiza 919 Piso 2 Rosario Santa Fe, Argentina, CP 2000	Argentina
SIDERMES S.p.A.	Via Mantova 10, 20835 Muggiò (MB), Italy	Italy
SIDERMES SENSORES TERMICOS DO BRASIL LTDA	Estrada Municipal PDD 436, S/N, Prédio 'C', Bairro da Boa Vista, Municipio de Piedade, Estado de São Paulo, Brazil	Brazil
SIR Feuerfestprodukte GmbH	Siegener Strasse 152, Kreuztal, D-57223, Germany	Germany
SOLED SAS	Parc d'Activités, Belle Fontaine, 57780, Rosselange, France	France
Son.Te.Co. GmbH	Rheinstrasse 7, D-41836, Hückelhoven, Germany	Germany
Tamworth UK Limited	165 Fleet Street, London, EC4A 2AE, England	England
Thomas Marshall (Loxley) Limited	Greyfriars Court, Paradise Square, Oxford, OX1 1BE, England	England
Unicorn Industries Limited	165 Fleet Street, London, EC4A 2AE, England	England
Veservice Ltda	Av Brasil, 49550, Distrito Industrial de Palmares, Campo Grande, Rio de Janeiro, 23065-480, Brazil	Brazil
Vesuvius (Thailand) Co., Ltd	170/69, 22nd Floor Ocean Tower 1, Ratchadapisek Road, Klongtoey, Bangkok, 10110, Thailand	Thailand
Vesuvius (V.E.A.R.) S.A.	Street Urquiza, 919,Fllor 2, Rosario, Provincia de Santa Fé, Argentina	Argentina
Vesuvius Advanced Ceramics (China) Co., Ltd	221 Xing Ming Street, China-Singapore Suzhou Ind Park, Suzhou, Jiangsu Province, 215021, China	China
Vesuvius America, Inc.	1209 Orange Street, Wilmington, Delaware, 19801, United States	US (Delaware)
Vesuvius Americas Holdings, Inc	Corporation Trust Center, 1209 Orange Street, Wilmington, New Castle County, DE, 19801, United States	US (Delaware)

Notes to the Company Financial Statements
continued

Company legal name	Registered office address	Jurisdiction
Vesuvius Australia (Holding) Pty Limited	40-46 Gloucester Boulevarde, Port Kembla, NSW, 2505, Australia	Australia
Vesuvius Australia Pty Ltd	40-46 Gloucester Boulevarde, Port Kembla, NSW, 2505, Australia	Australia
Vesuvius Belgium N.V.	Zandvoordestraat 366, Oostende, B-8400, Belgium	Belgium
Vesuvius Canada Inc	181 Bay Street, Suite 1800, Toronto, Ontario, M5J 2T9, Canada	Canada
Vesuvius Ceramics Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius China Holdings Co. Limited	Office 813, 8/F, Paul Y centre, 51 Hung To Road, Kwun Tong, Kowloon, Hong Kong	Hong Kong
Vesuvius China Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Colombia SAS	Street 90, number 13 A - 31, floor 6, Bogota, Colombia	Colombia
Vesuvius Corporation S.A.	Salita delle Ginestre 10, Lugano Cassarate, CH 6900, Switzerland	Switzerland
Vesuvius Crucible Company	CT Corporation, 1209 Orange Street, The Corporation Trust Company, Wilmington, Delaware, 19801, United States	US (Delaware)
Vesuvius Emirates FZE	Warehouse No: 1J-09/3, P O Box 49261, Hamriyah Free Zone, Sharjah, United Arab Emirates	United Arab Emirates
Vesuvius Financial 1 Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Finland OY	Pajamäentie 10, 00360 Helsinki, Finland	Finland
Vesuvius Foundry Products (Suzhou) Co., Ltd.	12 Wei Wen Road, China-Singapore Suzhou Ind Park, Suzhou, Jiangsu Province, 215122, China	China
Vesuvius Foundry Technologies (Jiangsu) Co. Ltd	Chang Chung Road, Economic development zone	China
Vesuvius France S.A.	Rue Paul Deudon 68, Boite Postale 19, Feignies, F-59750, France	France
Vesuvius GmbH	Gelsenkirchener Strasse 10, Borken, D-46325, Germany	Germany
Vesuvius Group Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Group S.A.	17 Rue de Douvrain, Ghlin, 7011, Belgium	Belgium
Vesuvius Holding Deutschland GmbH	Gelsenkirchener Strasse 10, Borken, D-46325, Germany	Germany
Vesuvius Holding France S.A.S	68 Rue Paul Deudon, BP 19, Feignies 59750, France	France
Vesuvius Holding Italia - Società a Responsabilità Limitata	Piazza Borgo Pila 40, Genoa, Italy	Italy
Vesuvius Holdings Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Ibérica Refractarios S.A.	Capitán Haya, 56 - 1ºH, 28020 Madrid, Spain	Spain
Vesuvius International Corporation	CT Corporation, 1209 Orange Street, The Corporation Trust Company, Wilmington, Delaware, 19801, United States	US (Delaware)
Vesuvius Investments Limited	165 Fleet Street, London, EC4A 2AE, England	England

Company legal name	Registered office address	Jurisdiction
Vesuvius Istanbul Sanayi ve Ticaret AS	Gebze OSB2 Mh. 1700., Sok No:1704/1, Cayirova, Kocaeli, 41420, Turkey	Turkey
Vesuvius Italia SPA	Piazza Borgo Pila 40, Genoa, Italy	Italy
Vesuvius Japan Inc.	Daini-Naruse Akihabara Bldg. 3F, 27-10, 1-chome, Taito, Taito-ku, Tokyo, 110-0016, Japan	Japan
Vesuvius K.S.R. Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire S43 4XA, United Kingdom	England
Vesuvius Life Plan Trustee Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius LLC	10, Ul. Kooperativnaya, Zhukovsky, Moscow, 140180, Russian Federation	Russia
Vesuvius Malaysia Sdn Bhd	Level 18, The Gardens North Tower, Mid Valley City, Lingkaran Syed Putra, Kuala Lumpur, 59200, Malaysia	Malaysia
Vesuvius Management Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Mexico S.A. de C.V.	Av. Ruiz Cortinez, Num. 140, Colonia Jardines de San Rafael, Guadalupe, Nuevo León, CP 67119, Mexico	Mexico
Vesuvius Mid-East Limited	56, rd 15, Apt 103, Maadi, Cairo, Egypt	Egypt
Vesuvius Minerals Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Moravia, s.r.l	Konska c.p. 740, Trinec, 739 61, Czech Republic	Czech Republic
Vesuvius New Zealand Limited	18 Cryers Road, East Tamaki, Auckland, New Zealand	New Zealand
Vesuvius OOO	Afanasyevsky, Pereulok 41 A, Moscow, Russia, 119019, Russian Federation	Russia
Vesuvius Overseas Investments Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Overseas Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Pension Plans Trustees Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Pigments (Holdings) Limited	165 Fleet Street, London, EC4A 2AE, England	England
Vesuvius Poland Spólka z.o.o	Ul Tyniecka 12, Skawina, 32-050, Poland	Poland
Vesuvius Ras Al Khaimah FZ-LLC	Street No. F14, RAK Investment Authority Free Zone, Al Hamra, Ras Al Khaimah, PO Box 86408, United Arab Emirates	United Arab Emirates
Vesuvius Refractarios de Chile SA	Street San Martin 870, Room 308, Tower B, Concepcion, Chile	Chile
Vesuvius Refractarios de Venezuela C.A.	Av. Principal UD-321, Centro Industrial, Caroni, Galpon #2. Matanzas, Ciudad Guayana, Edo Bolivar, Venezuela	Venezuela
Vesuvius Refractories (Tianjin) Co., Ltd	56, 13th Avenue, TEDA, Tianjin, 300457, China	China
Vesuvius Refractories S.r.l.	Galati, Marea Unire avenue 107, Galati county, Romania	Romania
Vesuvius Refratários Ltda	Av Brasil, 49550, Distrito Industrial de Palmares, Campo Grande, Rio de Janeiro, 23065-480, Brazil	Brazil
Vesuvius Refractory India Private Limited	Room No. 9, 3rd Floor, 7 Ganesh Chandra Avenue, Kolkata, WB 700013 IN, India	India

Company legal name	Registered office address	Jurisdiction
Vesuvius Scandinavia AB	4, Forradsgatan, Amal, S-662 34, Sweden	Sweden
Vesuvius Scotland Limited	Irvinebank Factory, Brown St, Newmilns, Ayrshire, KA16 9AG, Scotland	Scotland
Vesuvius Slavia a.s.	Prumyslová 726, Konská, Trinec, 739 61, Czech Republic	Czech Republic
Vesuvius Solar Crucible (Suzhou) Co., Ltd.	58, KuaChun Road, Kua Tang, China-Singapore Suzou Ind Park, Suzhou, Jiangsu Province, 215122, China	China
Vesuvius South Africa (Pty) Limited	Pebble Lane, Private Bag X2, Olifantsfontein, Gauteng Province, 1665, South Africa	South Africa
Vesuvius UK (2002) Limited	Vesuvius Scotland Ltd, 78 Brown Street, Newmilns, Ayrshire, KA16 9AA, Scotland	Scotland
Vesuvius UK Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, United Kingdom	England

Company legal name	Registered office address	Jurisdiction
Vesuvius Ukraine LLC	27, Udarnykiv Street, City of Dnipropetrovsk, Ukraine	Ukraine
Vesuvius USA Corporation	CT Corporation, 208 South LaSalle Street, Chicago, Cook County, Illinois, IL 60604, United States	US (Illinois)
Vesuvius Zyalons Holdings Limited	Brown Street, Newmilns, Ayrshire, KA16 9AG, Scotland	Scotland
Vesuvius Zyarock Ceramics (Suzhou) Co., Ltd	58, KuaChun Road, Kua Tang, China-Singapore Suzou Ind Park, Suzhou, Jiangsu Province, 215122, China	China
Vesuvius-Premier Refractories (Holdings) Limited	1 Midland Way, Central Park, Barlborough Links, Derbyshire, S43 4XA, England	England
VSV Advanced Ceramics (Anshan) Co., Ltd	Xiaotaizi Village, Ningyuan Town, Qianshan District, Anshan, Liaoning Province, China	China
Wilkes-Lucas Limited	165 Fleet Street, London, EC4A 2AE, England	England
Yingkou Bayuquan Refractories Co., Ltd	Qing Long Shan Street, Bayuquan District, Liaoning Province, YingKou	China

Those companies and joint ventures which are not wholly owned by Vesuvius plc or one of its subsidiary companies are listed below.

Company legal name	Registered office address	Jurisdiction	% Group ownership
Angang Vesuvius Refractory Company Ltd	Taxi District, Anshan City, Liaoning province, China	China	50
Beauvac Participações S/A	Street Libero Badaro, 293, cj. 20D, São Paulo, Centro, 01009-000, Brazil	Brazil	50
Foseco Golden Gate Company Limited	6 Kung Yeh 2nd Road, Ping Tung Dist, Ping Tung, 90049, Taiwan	Taiwan	51
Foseco India Limited	922/923, Gat, Sanaswadi, Taluka, Shirur, Pune, 412208, India	India	74.98
Foseco (Thailand) Limited	170/69, 22nd Floor Ocean Tower 1, Ratchadapisek Road, Klongtoey, Bangkok, 10110, Thailand	Thailand	74
INTAHSA SA	Street Duque de Caxias 563, house 04, Room 01, Barueri, São Paulo, Centro, 06401-010, Brazil	Brazil	25
Newshelf 480 (Proprietary) Limited	44 Main Street, Johannesburg, 2001, South Africa	South Africa	45
VESUVIUS CESKÁ REPUBLIKA, a.s.	Prumyslová 726, Konská, Trinec, 739 61, Czech Republic	Czech Republic	60
Vesuvius India Limited	P-104 Taratala Road, Kolkata, 700 088, India	India	55.57
Wuhan Wugang-Vesuvius Advanced CCR Co., Ltd.	Gongnong Village Qingshan District, Wuhan, Hubei Province, 430082, China	China	50
Wuhan Wugang-Vesuvius Advanced Ceramics Co., Ltd	Gongnong Village Qingshan District, Wuhan, Hubei Province, 430082, China	China	50

As with Vesuvius plc, all of the above companies have a 31 December year-end. All subsidiaries, investments and joint ventures are included in the Consolidated Financial Statements of the Company.

5.3 Audit exempt subsidiaries

The following UK subsidiaries are exempt from audit of their individual financial statements by virtue of Section 479A of the Companies Act 2006.

Brazil 1 Limited
Foseco Limited
Foseco Technology Limited
Foseco Transnational Limited
Foseco (FS) Limited
Foseco (GB) Limited
Foseco Steel (Holdings) China Limited
Foseco (UK) Limited
John G. Stein & Company Limited
S G Blair & Company Limited
Vesuvius China Limited
Vesuvius Group Limited
Vesuvius Minerals Limited
Vesuvius Pigments (Holdings) Limited
Vesuvius-Premier Refractories (Holdings) Limited

Notes to the Company Financial Statements
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6. Other Creditors

	2016 £m	2015 £m
Amounts owed to subsidiary undertakings	**1,073.2**	1,029.2
Accruals and other creditors	**1.3**	1.2
Total amounts falling due within one year	**1,074.5**	1,030.4

7. Issued Share Capital

7.1 Accounting policy

Equity instruments issued by the Company are recorded at the proceeds received, net of direct issue costs.

7.2 Analysis of issued share capital

The issued ordinary share capital of the Company as at 31 December 2016 was 278.5 million shares of £0.10 each (31 December 2015: 278.5 million shares of £0.10 each). Of this, 7.3 million shares were held in Treasury and 1.1 million were held by the Vesuvius Group employee share ownership plan trust ('ESOP'). The Company only has one class of shares in issue, Ordinary Shares. All shareholders enjoy the same rights in relation to these shares, including rights in relation to voting at general meetings of the Company, distribution of dividends and repayment of capital.

8. Shareholders' Funds

8.1 Accounting policy

Taxation

Both current and deferred tax are calculated using tax rates and laws that have been enacted, or substantively enacted, by the balance sheet date.

Current tax payable is based on the taxable result for the year. Deferred taxation is recognised, without discounting, in respect of all timing differences that have originated, but not reversed, at the balance sheet date, with the exception that deferred taxation assets are only recognised if it is considered more likely than not that there will be suitable future profits from which the reversal of the underlying timing differences can be deducted. Provision is made for the tax that would arise on remittance of the retained earnings of overseas subsidiaries only to the extent that, at the balance sheet date, dividends have been accrued as receivable.

8.2 Reconciliation of movements in shareholders' funds

	Share capital £m	Retained earnings £m	Total £m
As at 1 January 2015	27.8	771.3	799.1
Profit recognised for the year	—	0.4	0.4
Purchase of own shares	—	(5.2)	(5.2)
Recognition of share-based payments	—	0.1	0.1
Dividend paid	—	(43.9)	(43.9)
As at 1 January 2016	**27.8**	**722.7**	**750.5**
Loss recognised for the year	—	**(3.0)**	**(3.0)**
Purchase of own shares	—	—	—
Recognition of share-based payments	—	**1.7**	**1.7**
Dividend paid	—	**(43.9)**	**(43.9)**
As at 31 December 2016	**27.8**	**677.5**	**705.3**

The Company had distributable reserves of £677.5m as at 31 December 2016 (2015: £722.7m).

9. Share-based Payments

9.1 Accounting policy

The Company operates equity-settled share-based payment arrangements for its employees. Equity-settled share-based payments are measured at fair value at the date of grant. The fair value determined at the grant date takes account of the effect of market-based conditions, such as the total shareholder return target upon which vesting for some of the awards is conditional, and is expensed on a straight-line basis over the vesting period with a corresponding increase in equity. The cumulative expense recognised is adjusted for the best estimate of the shares that will eventually vest and for the effect of other non-market-based vesting conditions, such as growth in headline earnings per share, which are not included in the fair value determined at the date of grant. For grants with market-based conditions attaching to them, fair value is measured using a form of stochastic option pricing model. For all other grants, fair value is measured using the Black-Scholes option pricing model.

9.2 Profit and loss account recognition

The Company operates a number of different share-based payment schemes, the main features of which are detailed between pages 94 to 96 of the Directors' Remuneration Report. A total of £0.5m was charged to the profit and loss account in the year with regard to share-based payments (2015: £0.5m credit).

9.3 Details of outstanding options

	Outstanding awards							
	As at 1 Jan 2016 no.	**Granted no.**	**Exercised no.**	**Forfeited/ lapsed no.**	**As at 31 Dec 2016 no.**	**Awards exercisable as at 31 Dec 2016 no.**	**Weighted average outstanding contractual life of awards years**	**Range of exercise prices pence**
LTIP	**916,163**	**581,901**	—	**(341,504)**	**1,156,560**	—	**8.5**	**n/a**
Weighted average exercise price	**nil**	**nil**	**nil**	**nil**	**nil**	—		**n/a**
Other plans	**82,261**	—	**(51,859)**	**(21,845)**	**8,557**	—	**0.8**	**n/a**
Weighted average exercise price	**nil**	**nil**	**nil**	**nil**	**nil**	—		**n/a**

For options exercised during 2016 included in "other plans", the share price at the date of exercise was 333 pence.

	Outstanding awards							
	As at 1 Jan 2015 no.	Granted no.	Exercised no.	Forfeited/ lapsed no.	As at 31 Dec 2015 no.	Awards exercisable as at 31 Dec 2015 no.	Weighted average outstanding contractual life of awards years	Range of exercise prices pence
LTIP	1,227,577	411,652	(56,309)	(666,757)	916,163	—	8.2	n/a
Weighted average exercise price	nil	nil	nil	nil	nil	—		n/a
Other plans	43,301	38,960	—	—	82,261	33,220	0.5	n/a
Weighted average exercise price	nil	nil	nil	nil	nil	—		n/a

For options exercised during 2015, the share price at the date of exercise was 517 pence for LTIP schemes.

Notes to the Company Financial Statements
continued

9. Share-based Payments (continued)

As at 31 December 2016, the total options exercisable by all Group employees over the £0.10 ordinary shares and capable of being satisfied through new allotments of shares or through shares held by the Company's ESOP were as follows:

	Years of award/grant	Option prices (£)	Latest year of exercise/ vesting	Number of options/ allocations outstanding
Long Term Incentive Plan	2014-2016	nil	2016/2026	2,398,185
Deferred Share Bonus Plan	2013-2014	nil	2016/2017	7,786
Medium Term Incentive Plan	2014-2016	nil	2019	189,094
Restricted rights	2015-2016	nil	2017/2019	19,692

Fair value of options granted under the LTIP during the year:

	2016		2015	
	EPS element	**TSR element**	EPS element	TSR element
Fair value of options granted (per share)	**292p**	**112p**	491p	275p
Share price on date of grant (per share)	**292p**	**292p**	491p	491p
Expected volatility	**n/a**	**26.0%**	n/a	24.0%
Risk-free interest rate	**n/a**	**0.4%**	n/a	0.62%
Exercise price (per share)	**nil**	**nil**	nil	nil
Expected term (years)	**4**	**4**	4	4
Expected dividend yield	**n/a**	**n/a**	n/a	n/a

The fair value of share options with non-market performance conditions has been calculated using the Black-Scholes option pricing model. The fair value of options with market-related performance conditions are measured using the Monte Carlo model. Expected volatility was determined by calculating the historical volatility of the group's share price over the 2.75 years (2015: 2.25 years) prior to the grant date. The risk-free rate of return was assumed to be the yield to maturity on a UK fixed gilt with the term to maturity equal to the expected life of the option. At the discretion of the Remuneration Committee, award holders receive the value of dividends that would have been paid on their vested shares in the period between grant and vesting. Accordingly, there is no discount to the valuation for dividends foregone during the vesting period.

10. Contingent Liabilities

Where the Company enters into financial guarantee contracts to guarantee the indebtedness of other companies within its Group, the Company considers these to be insurance arrangements and accounts for them as such. In this respect, the Company treats the guarantee contract as a contingent liability until such time as it becomes probable that the Company will be required to make a payment under the guarantee. Guarantees provided by the Company as at 31 December 2016 in respect of the liabilities of its subsidiary companies amounted to £569.4m (2015: £486.0m), which includes guarantees of $310m and €30m (2015: $310m and €30m) in respect of US Private Placement Loan Notes and £141.7m (2015: £118.9m) in respect of drawings under the syndicated bank facility; together with £150.8m (2015: £108.2m) in relation to a guarantee provided to the Company's UK subsidiary which acts as Trustee for the Group's UK pension plan. The guarantee is over all present and future pension liabilities of the plan and the contingent liability amount represents the net deficit on a buy-out basis as shown in the most recent triennial valuation.

Vesuvius has extensive international operations and is subject to various legal and regulatory regimes, including those covering taxation and environmental matters. Several of the Company's 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 are aware of a number of issues which are, or may be, the subject of dispute with tax authorities. Whilst the outcome of litigation and other disputes can never be predicted with certainty, having regard to legal advice received and the insurance arrangements of the Company and its subsidiaries, the Directors believe that none of these matters will, either individually or in the aggregate, have a materially adverse effect on the Company's financial condition or results of operations.

11. Related Parties

All transactions with related parties are conducted on an arm's length basis and in accordance with normal business terms. Transactions between related parties that are wholly owned Group subsidiaries are not disclosed in this Note.

Five-Year Summary: Divisional Results from Continuing Operations

		2016	2015	2014	2013	2012
Steel division						
Revenue	£m	**942**	898	981	1,018	1,018
Trading profit[1]	£m	**79.2**	79.5	96.4	88.7	83.1
Return on sales[1]	%	**8.4**	8.9	9.8	8.7	8.2
Employees: year-end	no.	**7,782**	7,783	8,349	7,524	7,601
Foundry division						
Revenue	£m	**459**	424	463	493	530
Trading profit[1]	£m	**54.1**	44.5	46.4	51.3	48.2
Return on sales[1]	%	**11.8**	10.5	10.0	10.4	9.1
Employees: year-end	no.	**3,058**	3,129	3,443	3,330	3,585

Note:
1. The unaudited trading profit number reported above for 2012 is restated for the impact of IAS 19(R), which was adopted by the Company during 2013.

Shareholder Information

Enquiries

The Company's share register is managed by Equiniti, who can be contacted regarding shareholding queries at the following address:

Equiniti Limited
Aspect House, Spencer Road
Lancing, West Sussex, BN99 6DA
Tel (UK only) 0371 384 2335
Tel (non-UK) +44 (0)121 415 7047

For the hard of hearing, Equiniti offers a special Textel service which can be accessed by dialling 0371 384 2255 (or +44 (0)121 415 7028 from outside the UK).

All other shareholder enquiries not related to the share register should be addressed to the Company Secretary at the registered office or emailed to shareholder.information@vesuvius.com.

Registered Office and Group Head Office

Vesuvius plc
165 Fleet Street
London EC4A 2AE
Tel +44 (0)20 7822 0000
Fax +44 (0)20 7822 0100
(Registered in England & Wales No. 8217766)

Corporate Website

Shareholder and other information about the Company can be accessed on the Company's website www.vesuvius.com.

Shareview

A website, www.shareview.co.uk, is operated by Equiniti, the Company's Registrars, enabling shareholders to access details of their shareholdings online. The website provides information useful for the management of investments together with an extensive schedule of frequently asked questions. In order to gain access to information on your shareholding, you will require your shareholder reference number, which can be found at the top of the Company's share certificates.

Shareholders can register to receive shareholder communications electronically, including the Company's Annual Report and Accounts, rather than in paper form, using Shareview. The registration process requires input of the shareholder reference number. To ensure that shareholder communications are received in electronic form, 'email' should be selected as the mailing preference. Once registered, shareholders will be sent an email notifying them each time that a shareholder communication has been published on the Company's website.

Dealing Services

UK resident shareholders can now sell shares on the internet or by phone using Equiniti's Shareview Dealing facility by either logging on to www.shareview.co.uk/dealing or by calling 0345 603 7037 between 8.00 am and 4.30 pm on any business day (excluding Bank Holidays).

In order to gain access to this service the shareholder reference number is required, which can be found at the top of the Company's share certificates.

Dividend Reinvestment Plan

The Company offers holders of ordinary shares the opportunity to participate in a dividend reinvestment plan, through which shareholders can use any cash dividend declared to buy additional shares in Vesuvius. Further details, including the terms and conditions of the plan, are available on the Vesuvius website www.vesuvius.com or from Equiniti by calling the Share Dividend Helpline on 0371 384 2268 (or +44 (0)121 415 7173 from outside the UK).

Overseas Payment Service

Equiniti provides a dividend payment service in over 90 countries that automatically converts payments into the local currency by an arrangement with Citibank Europe PLC. Further details, including an application form and terms and conditions of the service, are available on www.shareview.co.uk or from Equiniti by calling +44 (0)121 415 7047 or writing to Equiniti, Aspect House, Spencer Road, Lancing, West Sussex, BN99 6DA, United Kingdom (please quote Overseas Payment Service with details of the Company and your shareholder reference number).

Financial Calendar

2017 Annual General Meeting	10 May 2017
Announcement of 2017 half-year results	27 July 2017

Analysis of ordinary shareholders

	Investor type			Shareholdings			
As at 31 December 2016	Private	Institutional and other	Total	1–1,000	1,001– 50,000	50,001– 500,000	500,001+
Number of holders	2,672	558	3,230	2,555	507	111	57
Percentage of holders	82.72%	17.28%	100%	79.10%	15.70%	3.44%	1.76%
Percentage of shares held	0.96%	99.04%	100%	0.14%	1.43%	6.60%	91.84%

Share Fraud – Spot the Warning Signs

Investment scams are designed to look like genuine investments.

Have you been…

> Contacted out of the blue
> Promised tempting returns and told the investment is safe
> Called repeatedly, or
> Told the offer is only available for a limited time?

If so, you might have been contacted by fraudsters.

How to avoid Share Fraud

1. Reject cold calls
If you've been cold called with an offer to buy or sell shares, chances are it's a high-risk investment or a scam. You should treat the call with extreme caution. The safest thing to do is to hang up.

2. Check the firm on the FS Register at www.fca.org.uk/register
The Financial Services Register is a public record of all the firms and individuals in the financial services industry that are regulated by the Financial Conduct Authority (FCA).

3. Get impartial advice
Think about getting impartial financial advice before you hand over any money. Seek advice from someone unconnected to the firm that has approached you.

Reporting a Scam

If you suspect that you have been approached by fraudsters please tell the FCA using the share fraud reporting form at www.fca.org.uk/scams, where you can find out more about investment scams. You can also call the FCA Consumer Helpline on 0800 111 6768 (or +44 (0)20 7066 1000 from outside the UK).

If you have lost money to investment fraud, you should report it to Action Fraud on 0300 123 2040 or online at www.actionfraud.police.uk.

Find out more at www.fca.org.uk/scamsmart

Glossary

5S	Five steps to improve housekeeping and therefore workplace safety and efficiency: separate, sort, shine, standardise and sustain
8D	An eight-step methodology to resolve customer, supplier and internal quality issues
AGM	Annual General Meeting
CIS	Commonwealth of Independent States (Russian Commonwealth)
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
Company	Vesuvius plc
DSBP	Deferred Share Bonus Plan
DTR	The Disclosure and Transparency Rules of the UK Financial Conduct Authority
EBITDA	Trading profit before depreciation and amortisation of non-acquired intangible charges
EMEA	Europe, Middle East and Africa
EPS	Earnings per share
EU	European Union
FRC	Financial Reporting Council
FRS	Financial Reporting Standards
FTSE 250	Equity index whose constituents are the 101st to 350th largest companies listed on the London Stock Exchange in terms of their market capitalisation
FX	Foreign exchange
GHG	Greenhouse gas
Group	Vesuvius plc and its subsidiary companies
IAS	International Accounting Standard
IFRS	International Financial Reporting Standards
KPI	Key performance indicator
LTI	Lost time injury
LTIFR	Lost time injury frequency rate, a KPI which calculates the number of LTIs per million hours worked
Median	The middle number in a sorted list of numbers
NAFTA	The area to which the North American Free Trade Agreement applies
OEM	Original Equipment Manufacturer
Ordinary share	An ordinary share of 10p in the capital of the Company
R&D	Research and development
TSR	Total shareholder return
Turbo.S	The Vesuvius safety training programme
UK GAAP	UK Generally Accepted Accounting Principles
VSP	Vesuvius Share Plan

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The imagery included in this Annual Report aims to capture the many different aspects of Vesuvius around the world. The photographer Samuel Dhote shot most of these images, except on page 57 where Tim Shield's photography has been featured.

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