



# Creating a world fit for the future

Ricardo plc  
Annual Report & Accounts 2019/20

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## Our core activities:

### Access to clean air and water

...is critical to address the global challenges of population growth, mass urbanisation and rural development. We provide policy and strategic advice, tools and solutions that are underpinned by multi-sector knowledge – solutions that enable access to clean air and water, and that maximise health and equity outcomes. By drawing on our world-class technical expertise in air quality modelling we are able to provide governments, local authorities and multinational organisations with the air quality decision-support tools to understand impacts and develop improvement plans.



### Decarbonised and clean transport solutions

...address applications across multiple mobility sectors. We provide class-leading decarbonised and clean transport solutions that are supported by innovative technology. Thanks to our deep understanding of the transportation sector's demands and our expertise in policy development at both governmental and regional levels, we can deliver end-to-end engineered solutions tailor-made to meet our clients' objectives.



### Net Zero and carbon neutral solutions

...for energy and industry help combat climate change, reduce waste and support sustainable business operations. We create end-to-end value-chain solutions by combining long-range forecasting capability, life cycle analysis, system modelling, asset optimisation, supply-chain management and product innovation. Through the use of our life cycle assessment capabilities we can support governments in policy development and assist industries in the implementation of these policies at the levels of both infrastructure and product.



### Secure, connected mobility solutions

...provide communities and businesses with the ability to remain mobile and productive in every environment. Across a range of transport modes we provide strategic advice, tools and solutions that enable clients to develop, integrate and optimise their mobility businesses. These are supported with digital resilience system solutions, signalling system capabilities and full certification services.



### Protected, secure defence solutions

...are designed to protect those who protect us and ensure security and stability in unpredictable times. We offer software, services and products that promote safe and secure defence mobility and operational performance. We deliver full systems integration and tailored in-service support programmes. These skills are complemented by operational decision-support tools and asset-optimisation software to allow complex real-world scenarios to be robustly managed.



## Supported by Group-wide strategic enablers:

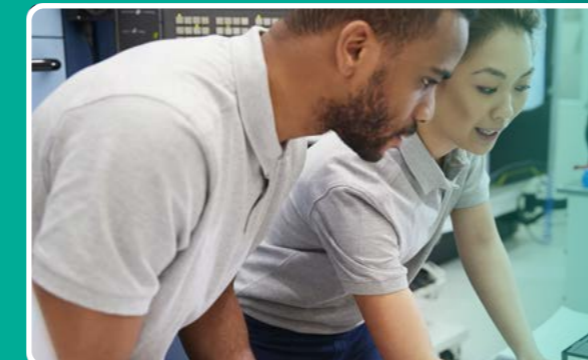
### Digitalised products and services

...are being developed around the three pillars of customer experience, operational excellence and new digital offerings. With the accelerated journey into a "digital-first" world, the ability to provide seamless engagement through integrated systems enables clients to access Ricardo's services and solutions through digital channels. Similarly, the digital tools already developed for the product creation process are being supplemented by greater intelligence and data analytics to bring faster, more cost-effective and higher quality solutions to our clients.



### Our skilled, diverse and agile workforce

...is the catalyst to deliver our mission and to achieve customer excellence and revenue growth. We aim to develop a highly motivated workforce where staff play to their strengths and are actively engaged. Our working practices are constantly evolving to meet changing employee expectations and ensure we deliver maximum business performance. We recognise the strengths that cultural diversity brings in terms of creativity, skills and insights. Regular interactions with our leaders give our teams the opportunity to maximise their engagement and performance. Our people are empowered to work on what they do best, and through regular feedback mechanisms we give staff a voice in the activities of the business.



### Our customer-centric organisation

...allows us to attract top-tier clients and to adapt our strategies to match their needs. Client retention leads to growth of new business and also helps reduce the cost of sales. Robust long-term business performance is underpinned through enduring strategic client relationships supported by focused and responsive organisational changes to meet changing client requirements. Because our clients face significant disruption of their markets and environments, Ricardo will always ensure that it is in a position to understand their needs and has the agility to offer solutions across a range of rapidly changing requirements.



### Systems engineering and optimisation

...mobilises an understanding of complex integration tasks for optimal performance. Through the use of virtual modelling of complex systems, Ricardo offers solutions that improve system performance, lower costs and deliver incremental end-user experiences. Our world is evolving into more and more complex systems as more aspects of our surroundings become connected, and such connectivity provides data that can be harnessed for the benefit of users. Feature-driven virtual product development toolchains will eventually be supported by a full digital data backbone; the application of this digital-twin technology will form the platform from which engineering solutions will be delivered. In the meantime, components of the data backbone have already been implemented in several of the markets that we serve.



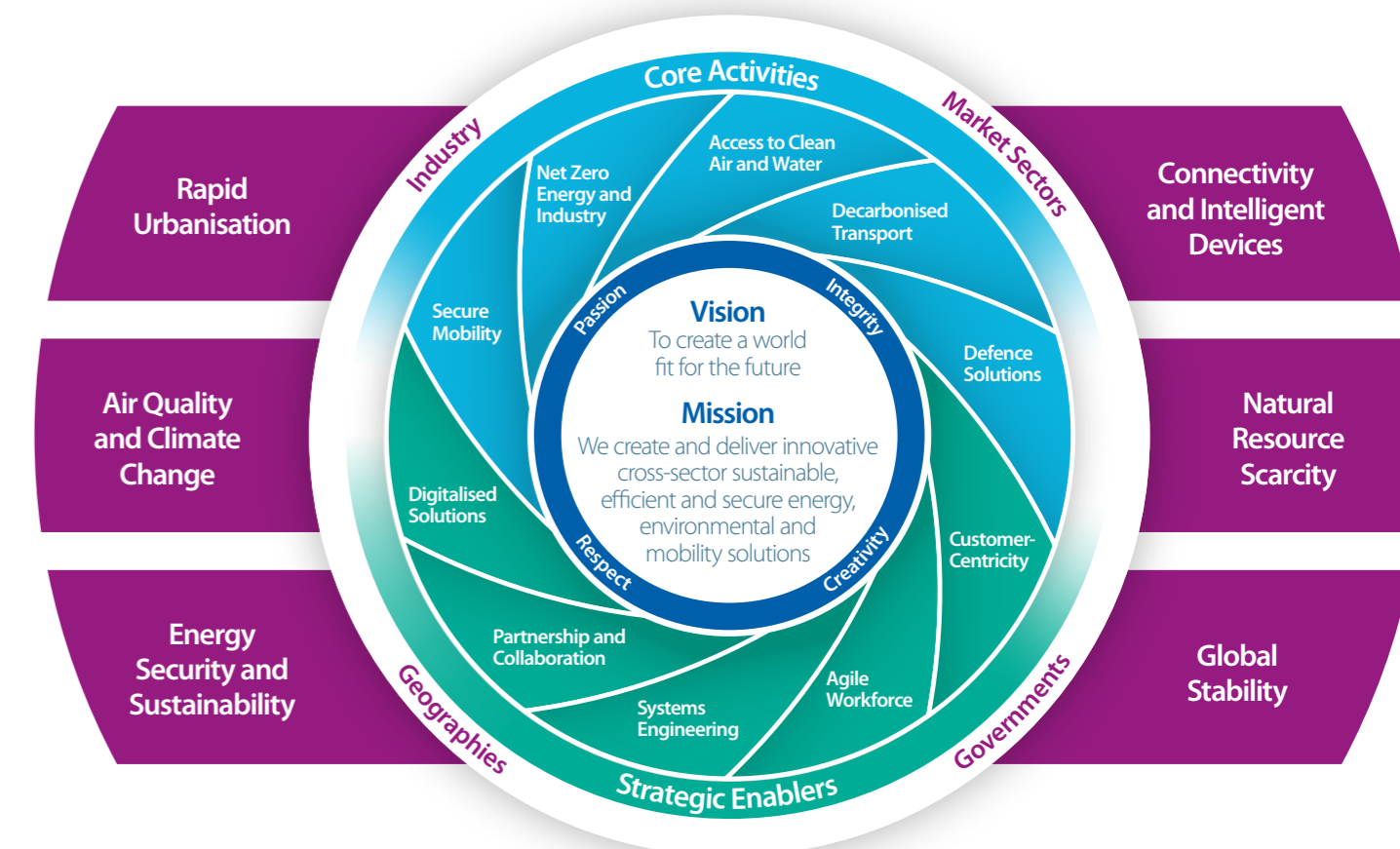
### Partnership & collaboration

...along with mergers and acquisitions, will deliver profitable growth through geographic, sector and capability expansion. Our strategy aims to develop partnerships, acquisitions and disposals that accelerate the growth of the organisation and to support the delivery of the mission by taking a holistic corporate perspective that maximises the returns from capital deployed. With the requirement to remain agile and to access critical skills and technology in adjacent market sectors, we are already actively engaged with several partners to offer end-to-end solutions. Ricardo also remains focused on using mergers and acquisitions as one of several tools to drive growth, sector diversification and stakeholder value.



# Strategic report

## Our mission and vision



This has been a year of unprecedented change across the globe, and we have seen everything from protests demanding action on climate change, to the damaging effects on life and livelihood presented by the COVID-19 pandemic. As the world grapples with the economic, psychological and social impact of the coronavirus, it is encouraging to see many governments launching "green recovery" plans which promise a positive impact on climate change and that can also be seen as economically beneficial - especially when it comes to creating jobs.

In delivering our mission, which we believe will help realise our vision to **Create a world fit for the future**, we are focusing on five core activities which align with a number of the UN Sustainable Development Goals.



More detail on Sustainable Development Goals is presented on page 27.



# Where we are

Three thousand dedicated and talented people in our global team of experts situated in key locations around the world.



**3,003**  
employees

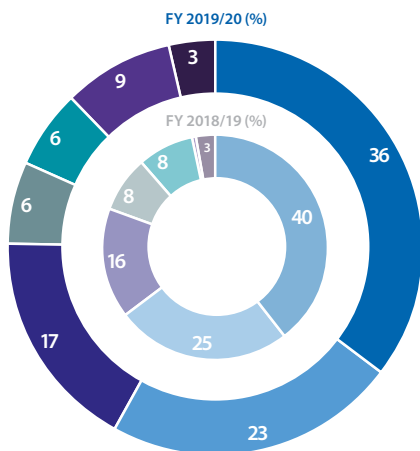
**21**  
countries

**55**  
sites

More detail on Our People is presented on pages 22 to 25.

## Revenue by geography

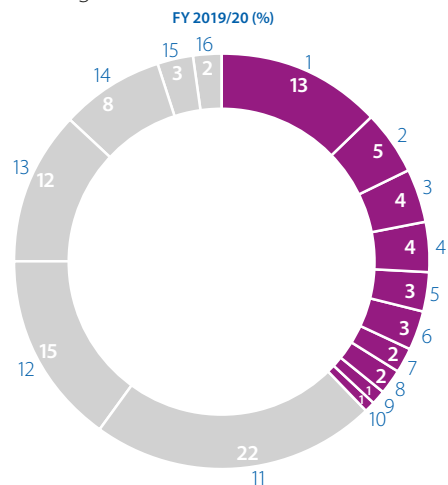
Our operations in selected market sectors span many different regions of the world:



- UK
- Mainland Europe
- North America
- China
- Australia
- Rest of Asia
- Rest of the World

## Order intake by customer

Our order intake arises from a global customer list that includes the world's major transportation original equipment manufacturers and operators; tier 1 suppliers; energy companies; and government agencies:



- 1-10. Top 10
- 11. UK
- 12. Mainland Europe
- 13. North America
- 14. Asia
- 15. Rest of the World
- 16. Australia

Order intake by segment is presented in the segments review on pages 47 to 59.



# Our markets

We bring the best of our diverse expertise to create novel and differentiated solutions for a number of market sectors.





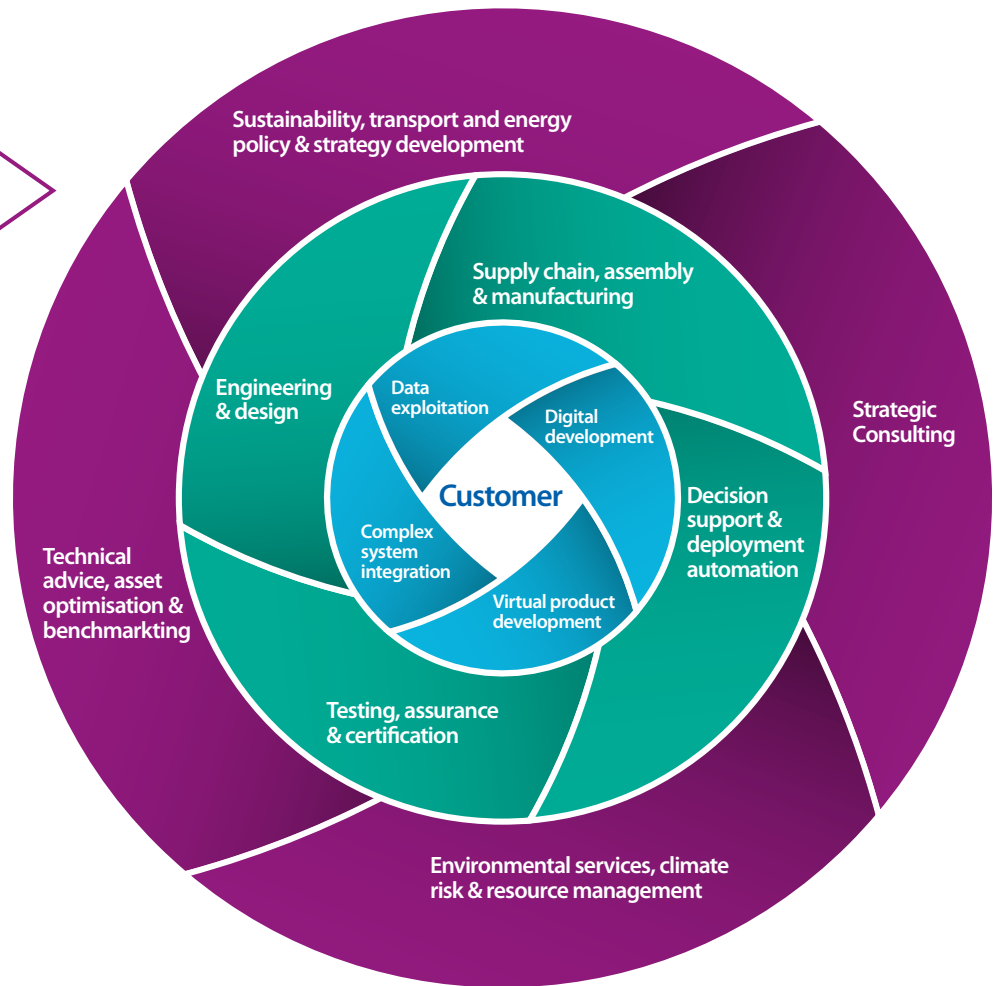
# Ricardo's business model

Ricardo creates value for our stakeholders by developing and delivering innovative cross-sector sustainable, efficient and secure energy, environmental and mobility solutions and products.

Ricardo expert staff – engineers, economists, scientists, technical experts, and management consultants – bring the best of their diverse expertise to create innovative and differentiating solutions to our clients' challenges.

We invest in physical and digital assets that support toolchain validation, final product certification and real-world data capture.

We are committed to invest in R&D to address the environmental, mobility and sustainability challenges of the future.



Through our advanced capabilities we support clients at each stage of the life cycle

Our activities are underpinned by



### Values

**Passion, Integrity, Respect** and **Creativity** drive us forward as an organisation and bind us together as a community.



### Efficient and sustainable operations

We take a proactive and engaged approach to maintain safe, efficient and sustainable operations.



### Governance

We recognise the importance of the Company's responsibilities and duties to both its shareholders and broader stakeholder group. This has been at the heart of our culture and decision-making process for many years. Our commitment is underpinned by Ricardo's Governance framework and Code of Conduct.



# Our strategic objectives

**We create value for our clients, staff and shareholders, the communities in which we operate, and our suppliers**



## Clients

Our clients include privately and publicly owned businesses of different sizes; major transportation original equipment manufacturers ('OEMs') and operators; governments; public authorities; and intergovernmental and international agencies. We help them address key challenges, supporting their business growth and increasing the efficiency of their operations.



## Staff

Ricardo is a diverse, close-knit community of differing backgrounds, practices and thinking. We promote diversity and inclusion and offer flexible working practices.



## Shareholders

With its strong capabilities, our diversified business is well positioned to continue to deliver sustainable growth and value for our shareholders.



## Community/Social value

We contribute to the communities in which our business operates and our staff live, and we support initiatives that are aligned to our values and expertise. We aim to create commercial success while recognising and mitigating our impact on communities and the environment.



## Suppliers

We work in close partnership with our suppliers to ensure that our supply chain is effective, efficient, ethically transparent and sustainable.

## 1 Sustainable business growth

We deliver profitable and sustainable growth with a clear focus on future trends and market demands, driven by client needs, technology change and the outlook for future policies and regulations, which helps to create a cleaner, healthier and safer world.

## 2 Risk mitigation

We mitigate business cyclicity and aim to avoid external dependency, whether this is related to any particular geography, technology, industry, sector or client.

## 3 Added value for clients

We deploy our know-how, experience and application expertise within a given sector and draw on our cross-sector capabilities to provide greater insights and synergies. We employ research and development to provide class-leading technology to our clients.

## 4 World-class talent

We promote and sustain a high-performance culture that attracts, develops and motivates a highly skilled, diverse, agile and motivated workforce to deliver on our mission.

## 5 Operational excellence

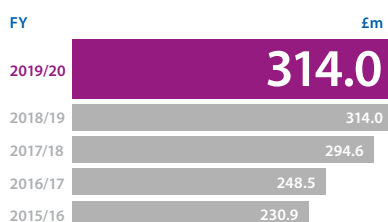
We maintain efficient and sustainable global operations that are digitally enabled to allow us to leverage data and bring existing processes and practices into a virtual environment. This improves productivity and reduces the environmental impact of the business.



# Financial highlights

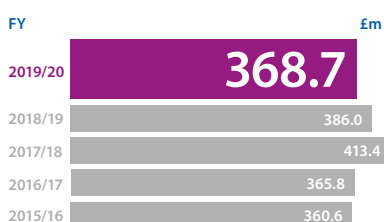
## Order book

0%



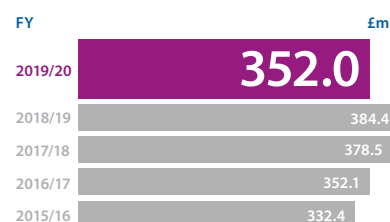
## Order intake

-4%



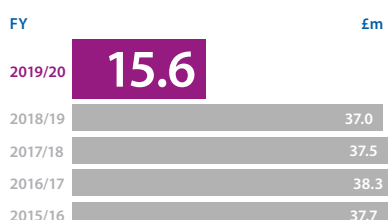
## Revenue

-8%



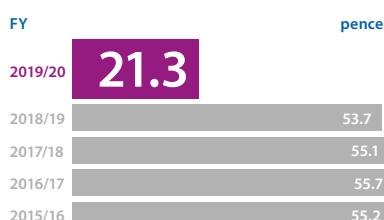
## Underlying<sup>(1)</sup> profit before tax

-58%



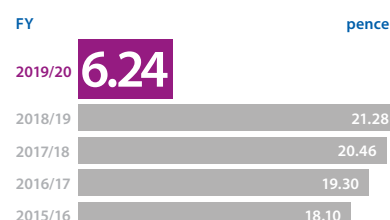
## Underlying<sup>(1)</sup> basic earnings per share

-60%



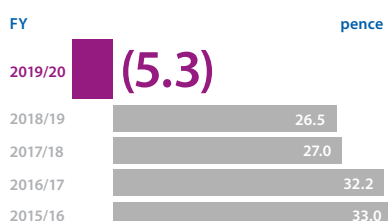
## Dividend per share (paid and proposed)

-71%



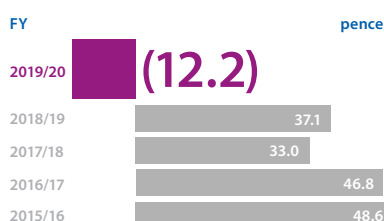
## Statutory (loss)/profit before tax

-120%



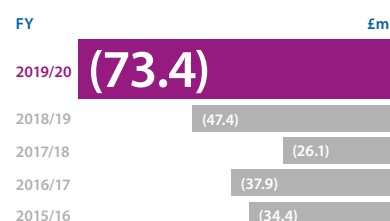
## Statutory basic (loss)/earnings per share

-133%



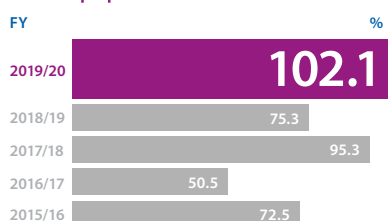
## Net debt<sup>(1)</sup>

-55%



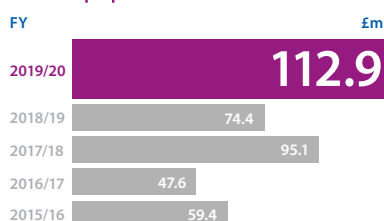
## Underlying<sup>(1)</sup> cash conversion<sup>(1)</sup>

+27pp



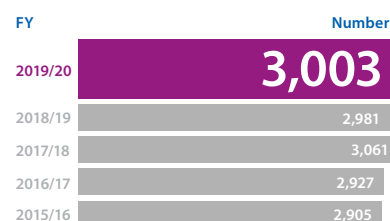
## Cash conversion<sup>(1)</sup>

+39pp



## Headcount<sup>(1)</sup>

+1%



(1) Please see the glossary on page 201 for a definition of the above terms.

Comparative Alternative Performance Measures ('APM') have not been updated to reflect the adoption of IFRS 16. In the year ended 30 June 2019, an IAS 17 charge of £8.5m was incurred.

# Operational highlights

## Coronavirus ('COVID-19')

From the beginning of the COVID-19 crisis, Ricardo focused on supporting its employees, clients and suppliers. Ricardo took swift action to ensure that staff could work from home with the minimum of disruption to the business, and acted to increase liquidity and headroom on its banking facilities. Ricardo donated and distributed approximately 15,000 face shields to communities around its UK and US locations.

'Digital-first' is still the core strategy for client and supplier communication. By the end of the year, all Ricardo's manufacturing and testing facilities were fully staffed and delivering client requirements with appropriate safety measures in place, and Ricardo's offices are open for employees who wish to return to work there.



## Acquisition of PLC Consulting

Ricardo expanded its presence in Australia through the acquisition of PLC Consulting Pty Ltd – since renamed Ricardo Energy, Environment and Planning, or 'REEP' – which brings a strong technical advisory capability in the full infrastructure and environment planning life cycle. The services complement and extend Ricardo's existing energy and environment capabilities. Ricardo's investment in the environmental sector aligns with the increasing awareness of the risks associated with climate change and public pressure for more ambitious action on reductions in greenhouse gas emissions.

## Virtual vehicle certification

Ricardo's 'digital-first' strategy enabled the Group's advanced emissions tests and certification facilities to offer a continued service to clients during the COVID-19 lockdown period. It did so by enabling the witnessing body and client representatives to participate fully in the test and certification via a secure connection, thus removing the need to travel. The client arranges shipping of the vehicle to the Ricardo test facility and all other interactions throughout the test and certification process are conducted remotely.



## CryoPower / Dolphin N2

Dolphin N2 was set up as a spin-out company in order to commercialise Ricardo's CryoPower intellectual property and assets. The CryoPower process presents a cryogenic route to electrification of heavy-duty applications such as trucks and power generation that negates the need for batteries. Following the successful spin-out in 2018, FPT Industrial S.p.A. acquired Dolphin N2 in December 2019. Ricardo will continue to apply the know-how arising from its research in advanced cold combustion concepts to other areas.

## South Korea Great Train eXpress project

Ricardo has been appointed by SG Rail Ltd – the special purpose company that will finance, design and build the GTX-A railway – to provide multidisciplinary engineering and assessment services during the development of Line A of the Great Train eXpress (GTX), the new higher-speed commuter network for Seoul and its surrounding commuter region.





## Chair's statement



**Sir Terry Morgan CBE**  
Chair

"This has been an unprecedented year and the volatility caused by the COVID-19 pandemic has proved the resilience of our business and reaffirms our strategy of diversification in our geographies and in our sectors. I am pleased to say that our two acquisitions in Australia have performed well during their first year under Ricardo ownership.

Our people have performed admirably during the year and I would like to thank them and their families for their commitment and support in these challenging times."

### Results

For the year ended 30 June 2020, the Group delivered revenue of £352.0m, together with underlying profit before tax of £15.6m and underlying basic earnings per share of 21.3 pence. On a reported basis, the Group delivered a loss before tax of £5.3m and basic loss per share was 12.2 pence.

As set out in more detail in the Chief Executive's Statement on pages 10 to 13 and the Financial Review on pages 42 to 46, the Group has been resilient in the face of challenging trading conditions, with continuing pressures in the automotive sector exacerbated by the onset of the COVID-19 pandemic in the second half of the year.

Throughout the year, the Group continued focus on its strategic objectives of geographic and sector diversification through carefully targeted acquisitions and disposals. The acquisition of Australian environmental consultancy, PLC Consulting Pty Limited – now Ricardo Energy, Environment and Planning, ('REEP') – was completed on 31 July 2019 and the business has quickly settled to life under Ricardo ownership, delivering results in line with expectations, as has Transport Engineering Pty Limited – now Ricardo Rail Australia ('RRA') – which was acquired at the end of the previous financial year. The Group completed the divestment of its first technology spin-out, Dolphin N2 on 19 December 2019. In addition, the Group sold its engine testing business in Detroit to a non-competitive strategic partner on 3 June 2020.

The Group's performance against its strategic objectives is outlined on pages 14 and 15. We also continued to invest in innovation, as described on pages 18 to 20, and in our people and our facilities.



### People

I would particularly like to thank all of our employees for their hard work and professionalism during a difficult year, and I appreciate their flexibility in transitioning to home working. I would also like to express my thanks to those employees who continued to work on our sites during lockdown for those services deemed essential by the government. Furthermore, special thanks go to our employee volunteers who came to work to make face masks for the NHS and local care homes. As set out in the Our People section on pages 22 to 25, Ricardo is a people-centred business and our employees underpin everything that the Group achieves.

It was with great sadness that, in April 2020, we lost one of our colleagues, Paul Manning, following his valiant fight against COVID-19. Paul first joined Ricardo in 2000 and was a highly skilled and respected technician working in the milling/prismatic section of Performance Products at our UK Midlands site. The Board's condolences and continued thoughts are with his family and friends.

Prominent achievements during the year have included Ricardo Strategic Consulting being named by *Forbes* as one

of America's leading management consultants, for the fifth consecutive year – from among more than 50,000 firms active within the US market.

In its third annual rating of the UK's top management consultancies, the *Financial Times* has again identified Ricardo Energy & Environment as a leader in the area of Sustainability in its listing of the UK's Leading Management Consultants 2020.

In the Made in the South East Awards, Performance Products was singled out as Manufacturer of the Year and Andrew Kershaw, an apprentice in Performance Products, was named Apprentice of the Year.

My congratulations go to all of those involved as well as to all the other individuals and team members who have won awards under the various Ricardo recognition programmes during the year, together with those members of staff who have gained academic success or peer-group recognition in their chosen career paths.

### Corporate governance

The Board firmly believes that robust corporate governance and risk management are essential to maintain the stability of the Group and its financial health. I report separately on Corporate Governance on pages 90 to 95 of this Annual Report.

Once again, I am proud that the FTSE4Good Index Series has confirmed Ricardo's continued inclusion for demonstrating strong Environmental, Social and Governance ('ESG') practices. This continued achievement bears testament to our commitment to the highest standards of corporate governance, which ultimately produces a better business and supports long-term performance.

### The Board

On 6 September 2019, we announced the retirement of Peter Gilchrist CB from the Board following the close of the AGM in November 2019. On 5 September 2019, Ricardo appointed two additional Non-Executive Directors, Russell King and Jack Boyer OBE. At the close of the AGM, Russell King was appointed Chair of the Remuneration Committee and Malin Persson was appointed Senior Independent Director. Following my decision to stand down as Chair of the Nomination Committee, Laurie Bowen was appointed to this role. On 12 May 2020, we announced the resignation of Mark Garrett, Chief Strategy Officer. Mark left the business on 31 July 2020 and the Board and Ricardo would like to thank him for his contribution over many years with the Group. I would

also like to thank each of our Non-Executive Directors for their counsel during the year.

### Dividend

The dividend has grown by an average of 7% each year over the last decade. On 25 February 2020 the Board declared a 4% increase in the interim dividend to 6.24p per share (Half Year 2018/19: 6.00p). The interim dividend was paid to shareholders on 6 April 2020. Due to the reduced performance experienced by the Company in the second half of the year, after careful consideration, the Board have decided not to recommend a final dividend for the year. This difficult decision has been taken to protect the Company's financial position. The board recognises the importance of dividends to shareholders and intends to resume dividend payments as soon as it is appropriate to do so.

### Outlook

More than ever, Ricardo's strategy is underpinned by trends which will affect an ever-increasing number of people around the globe: growing populations, mass urbanisation, declining air quality, climate change, more stringent emissions legislation and growing scarcity of natural resources.

Despite this turbulent background, we continue to deliver services and products to help build a cleaner, safer and more sustainable world. We remain confident that demand for our innovative solutions will continue and increase when economic activity returns to normal.



**Sir Terry Morgan CBE**  
Chair



# Chief Executive's statement



**Dave Shemmans**  
Chief Executive Officer

“The pandemic has made this a time of extreme global volatility. The resilience of our business has helped us weather the storm well - thanks to the agility and passion of our team and the underpinning strategy to be active in diverse geographies and sectors. I couldn't be prouder of our team as they transitioned to home working and focused on finding solutions in a “new normal” to deliver products and services to our global clients.

We continue to see good opportunities in the markets that we serve and we are well positioned to help clients address the major challenges of today: cleaner air and water; decarbonised and clean transport; carbon-neutral energy and industries; secure and connected mobility, and global security and stability.”

## Strategy

In this financial year we have continued to execute our strategy against a backdrop of increasing demand for action to combat climate change and protect the environment; high volatility in the automotive sector, driven by trade policy actions; the Brexit debate in the United Kingdom; a changing technological landscape; and the exceptional uncertainty created by the COVID-19 pandemic. This year has been one of constant change, but the underlying global environmental challenges and demand for progress remain - and will prevail after the immediate focus on the pandemic has passed.

Ricardo's financial performance in the first half year was largely on track with our plans and expectations. However, the second half of the year was affected by the lockdown measures put in place to slow the spread of COVID-19. These measures impacted not only our operations but also those of our clients. Access to client sites became limited and in some cases production lines halted completely: in a few instances this meant we were unable to deliver our products.

On the positive side, the structural drivers of growth in the markets in which we operate remain intact. The geographic and sector diversification of the group has made us resilient: particularly important has been our good mix of businesses serving governments and public agencies, such as defence, rail and environmental consulting. These tend to be more robust in volatile times than those businesses that serve industries such

as automotive, which rely more on consumer spending. Our resilience and the structural demand for environmental change position us well for growth when economic activity returns to a normal level in countries around the world.

Our clients require innovative services and solutions to address the challenges facing us today: access to cleaner air and water; decarbonised and clean transport; carbon-neutral energy and industries; secure and connected mobility; and global security and stability.

Ricardo's cross-sector strategic, environmental, engineering, technical and manufacturing competencies, together with our assurance and certification capabilities, uniquely position us to assist clients in all phases of a project or product life cycle. Integral to this is our commitment to market-leading research, development and innovation to provide enduring benefits and value to our clients.

We continue to invest in digitalisation and sustainability, developing new services and tools for clients and executing our strategic objective of operational excellence. Our global operations are becoming more digitally enabled and a number of processes and practices are being brought into a virtual environment to increase overall efficiency, flexibility and sustainability.

Further information on the execution of our strategy can be found on pages 14 and 15.

## Highlights from the year

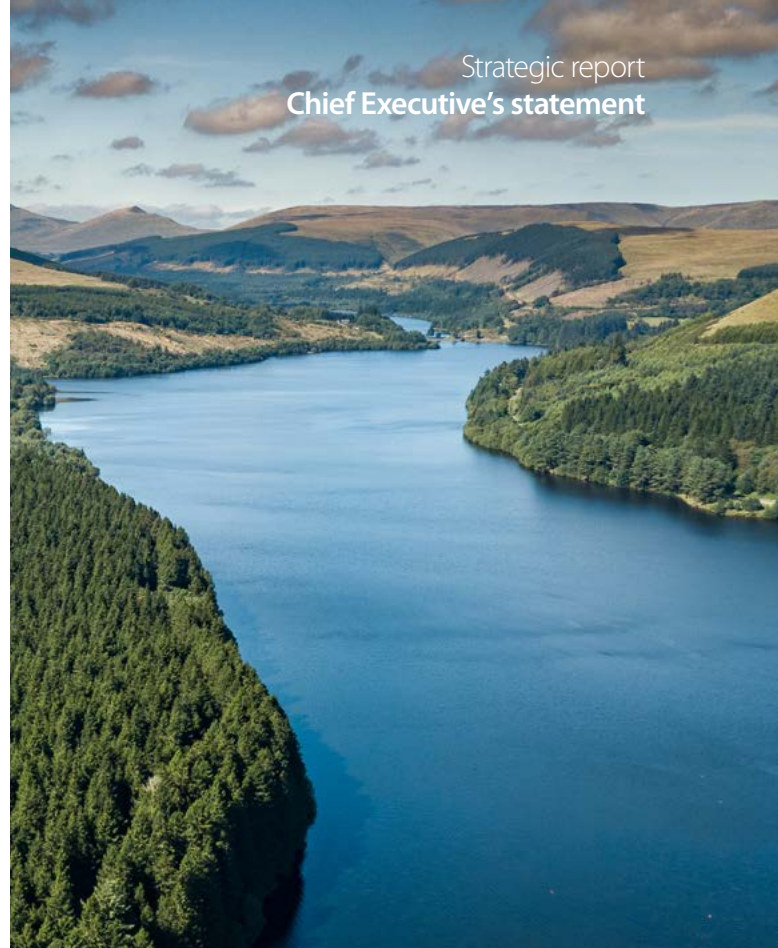
We closed the year with a good order intake of £368.7m and a year-end order book of £314.0m. The Group delivered revenue of £352.0m (FY 2018/19: £384.4m), 8% lower than in previous year, along with underlying profit before tax of £15.6m, 58% lower than in the previous year (FY 2018/19: £37.0m), and a reported operating loss of £0.9m (FY 2018/19: profit of £29.1m). Further details on the results for the year are provided in the Financial Review on pages 42 to 46.

In this financial year, two of our segments – Energy & Environment, and Defense – performed particularly strongly, with growth in revenue and underlying profit compared to the previous year. Our Rail segment also saw an increase in revenue. Its profitability was marginally up on the previous year as the business sought to refocus part of its UK operations and clients delayed projects, particularly in Asia, because of COVID-19.

The Automotive & Industrial segment, whose performance in the first part of the year had been affected by the continued pressure in the automotive sector, continued to experience downward pressures on revenue and underlying profit in the second half of the year. This extended across all geographies as economic activity slowed down or in some cases came to a stop, due to the response to the COVID-19 pandemic.

The Strategic Consulting & Software businesses are heavily weighted towards an automotive customer base, and was equally affected by the lockdown measures implemented globally, seeing a decrease in revenue and underlying profits compared to the prior year. Our Performance Products segment performed well through the year until the last quarter, as production lines at McLaren and some other clients were closed, meaning that they were temporarily unable to accept our engine and transmission products. Our customers' production lines are now all up and running.

Given the unprecedented public health and economic challenges that countries and companies have faced globally,



The UK water industry aims for Net Zero carbon by 2030 - with Ricardo assistance (see pages 66 to 69)

I am pleased with the resilience of our diversified business. Resilience has been at the heart of our growth and risk mitigation strategy over many years, with a philosophy of no dependence on any single geography, sector or client. Having a mix of government- and consumer-supported industries increases the resilience through economic cycles, too.

The efficiency and flexibility of our operations, supported by our investment in digitalisation and the commitment and dedication of our staff, have allowed Ricardo to continue to operate without interruptions and to offer business as usual to our customers during the disruption created by the COVID-19



The Great Western upgrade was a major rail infrastructure project for which Ricardo Certification played a key role





The U.S. government paves way for orders for Ricardo's innovative ABS/ESC safety system for the HMMWV or 'Humvee' (see pages 82 to 85)

The appearance of U.S. Department of Defense (DoD) visual information does not imply or constitute DoD endorsement.

pandemic. And thanks to an increase in committed funding available, the Group ended the year in a solid position in respect of financing facilities and liquidity.

Lessons were learnt within the Group from the early stages of the pandemic – especially from our operations in China, the first country to be put into lockdown. These lessons were applied when the virus reached Europe and the US. We moved rapidly to a remote-working environment and already had the tools and management processes in place to continue to execute our business, not only in terms of new business development and programme delivery, but also of corporate governance and control. We were pleased to see our Chinese operations return to normal business practice and increased financial performance in the last quarter. The majority of our staff in the US and Europe continued to work from home up to and beyond our June year-end, and throughout we have continued to receive good levels of new business wins, though there was some slowdown in deliveries.

This year we continued the expansion of Rail and Energy & Environment in Australia. It has been two years since Ricardo entered the Australian market and our customer base and service offering has been expanding steadily, with our two businesses delivering year-on-year growth in revenue and profit, driven by strong performances from RRA and REEP in their first year since being acquired.

The year also saw the first sale of technology arising from Ricardo advanced research and development efforts. On 19 December 2019, Ricardo completed the sale of its CryoPower intellectual property to FPT Industrial S.p.A and will continue to assist with their development of this innovative and high-efficiency combustion engine.

We continue to implement the strategy of moving towards an 'asset-light' business model; accordingly, the testing facilities are being reshaped to make our operations more agile and digitally enabled. At the end of the financial year we completed the sale of our test assets in Detroit and we continue to invest in remote testing capabilities in the UK. With the success of home working we will be addressing our office footprint moving forward, to



Ricardo is helping to demonstrate the use of local DC network technology to support increased availability of urban high capacity EV charging (see pages 74 to 77)

further increase agility and reduce costs.

Our focus on digital solutions rather than fixed asset investment has enabled us to offer virtual vehicle certification and testing services to our global customer base. During the lockdown period this digital-first approach has allowed us to protect our workforce as well as those of the customer and independent witnessing body, at the same time enabling emissions testing and certification to continue efficiently and effectively.

Our long-standing commitment to operate a sustainable business over the years has resulted in a number of actions and initiatives. Starting in FY 2019/20, in order to give our employees, customers, investors, suppliers and the local communities transparency in our approach, we have committed to implementing enhanced operational reporting and increased disclosures related to the Environmental, Social and Governance ('ESG') aspects of our operations and services, building on the best-practice work Ricardo's environmental consultants are delivering with clients around the world.

We strive to create a culture of innovation and learning, and to attract, motivate and retain a highly skilled, diverse and inclusive workforce. Our global experts are crucial to the success of our



Ricardo's agriculture team helps farmers, land managers and food manufacturers with the latest thinking for both the farmed and the wild landscape (see pages 62 to 65)

business and we invest in the development of the skills and competencies of our staff, providing equal opportunities for all.

Examples of how Ricardo's world-class teams have created value for clients across the world by delivering innovative solutions to create a cleaner and more sustainable future are summarised below – and are presented in detail in the Case Studies section on pages 62 to 85:

- **Energy & Environment:** Improving sustainability in the farmed and wild landscape
- **Energy & Environment:** Helping UK water towards zero carbon
- **Rail:** Supporting Europe's largest ever rail re-signalling project
- **Energy & Environment:** Enabling high-capacity electric vehicle charging
- **Automotive & Industrial:** Ending range anxiety for electric-vehicle drivers
- **Defense:** New model army

### Coronavirus ('COVID-19')

COVID-19 initially started impacting the business in China in late January with the closure of our offices in China, as well as those of the majority of our customers. The impact spread to Europe and the US in March and April, resulting in a slow down in order intake and the progress of ongoing projects, due to the inefficiencies caused by customer staff and our own staff working remotely.

From the beginning of the crisis, we set out a "Healthy People, Healthy Business" agenda. This focused on supporting our employees and their families together with the health and wellbeing of our clients, suppliers and the communities in which we operate.

We took swift action to ensure that an appropriate IT infrastructure was in place to allow staff to work from home and as efficiently as possible, with the minimum of disruption to the business.

We also acted quickly, with the support of our banks, to increase liquidity and headroom on our banking facilities.

We completed our face shield programme in May, having donated and distributed approximately 10,000 face shields to communities around our Midlands, Shoreham, Derby and Harwell locations in the UK, and another 5,000 in the US. Colleagues in other locations also donated face shields using our rapid prototyping capabilities as well as personal equipment.

By the end of the year, all of our manufacturing and testing facilities were operating and delivering client requirements with appropriate social distancing controls to meet the guidance of governments. Our offices are all open for employees who wish to return to work there and can do so safely. We are encouraging return for those who can and supporting those that cannot yet return so they can fully contribute to the business. Our IT resources continue to support the business across a mix of home-based and office-based working.

'Digital-first' is still the core strategy for client and supplier communication. Our business travel has been very limited in recent months. Some travel within Europe, China and US has commenced. There has been little long-haul travel and we expect that situation to continue in the coming months.

### Brexit

Across the Group, we have prepared for a range of possibilities for the outcome of trade negotiations between the UK and the EU and any disruption that may arise. Where possible we are now contracting with customers directly through our European-based subsidiaries and we have secured a European accreditation route for our Rail business to supplement our existing UKAS accreditation, which will allow us to continue to offer our services across Europe. We have also assessed inventory holding patterns for our McLaren production line and have appropriate plans in place to mitigate any short-term disruption to the supply chain.

### Outlook

Ricardo's diversified business creates and delivers cross-sector solutions, tools and products which help our clients address some of the most pressing issues in the areas of decarbonised and secure transport, clean air and the sustainability of scarce resources. We enter the new financial year with a good order book and we secured over £70m of new orders in July and August 2020. We have an agile business that has proven its resilience in a highly uncertain environment.



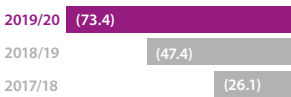
We continue to see good opportunities for Ricardo in the markets that we serve, and through the execution of our strategy we are well positioned to continue to grow our Group as a sustainable business that delivers value for all of our stakeholders.

**Dave Shemmans**  
Chief Executive Officer


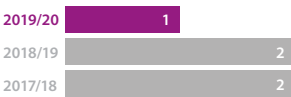
# Strategic performance

The Board monitors performance indicators related to our strategic objectives.

**1 Sustainable business growth:** we deliver profitable and sustainable growth with clear focus on future trends and market demands, driven by client needs, technology change and the outlook for future policies and regulations, which helps to create a cleaner, healthier and safer world.

Performance indicator	Commentary	Principal risks						
<b>Order book</b> £m  <table border="1"> <tr><td>2019/20</td><td>314.0</td></tr> <tr><td>2018/19</td><td>314.0</td></tr> <tr><td>2017/18</td><td>294.6</td></tr> </table>	2019/20	314.0	2018/19	314.0	2017/18	294.6	<p>We closed the year with an order book of £314.0m, which is in line with the prior year. The Group's order intake reduced by 4% to £368.7m in the year reflecting challenging trading conditions, with delays in orders being placed in the initial stages of the COVID-19 pandemic. A discussion of the performance of each segment is included on pages 47 to 59.</p>	Customers and markets Brexit COVID-19
2019/20	314.0							
2018/19	314.0							
2017/18	294.6							
<b>Revenue</b> £m  <table border="1"> <tr><td>2019/20</td><td>352.0</td></tr> <tr><td>2018/19</td><td>384.4</td></tr> <tr><td>2017/18</td><td>378.5</td></tr> </table>	2019/20	352.0	2018/19	384.4	2017/18	378.5	<p>Reported Group revenue reduced by 8% to £352.0m. Revenue was 12% lower on an organic basis (after normalising the prior year result for the impact of RRA and REEP).</p> <p>The Energy &amp; Environment, Defense and Rail segments saw increases in revenue from prior year. Automotive &amp; Industrial, Performance Products and Strategic Consulting &amp; Software segments saw revenue reductions.</p> <p>More details of this are described in the Financial Review section on pages 42 to 46, and in the operating segments review on pages 47 to 59.</p>	Contracts Customers and markets Brexit COVID-19
2019/20	352.0							
2018/19	384.4							
2017/18	378.5							
<b>Net debt</b> £m  <table border="1"> <tr><td>2019/20</td><td>(73.4)</td></tr> <tr><td>2018/19</td><td>(47.4)</td></tr> <tr><td>2017/18</td><td>(26.1)</td></tr> </table>	2019/20	(73.4)	2018/19	(47.4)	2017/18	(26.1)	<p>The Group had an increase in net debt of £26.0m in the year. This includes £5.1m of acquisitions, net of cash acquired, and acquisition-related payments; the net position on the purchase of the Detroit Technology Campus and the sale of the Detroit engine test business of £11.4m; and a net £1.5m cash outflow from restructuring activities. Contributions of £4.6m were also paid to the defined benefit pension scheme.</p>	Contracts Financing Defined benefit pension scheme
2019/20	(73.4)							
2018/19	(47.4)							
2017/18	(26.1)							

**2 Risk mitigation:** we mitigate business cyclical and aim to avoid external dependency, whether this is related to any particular geography, technology, industry, sector or client.

Performance indicator	Commentary	Principal risks						
<b>Segment diversity</b> Number of segments exceeding 10% of revenue  <table border="1"> <tr><td>2019/20</td><td>4</td></tr> <tr><td>2018/19</td><td>4</td></tr> <tr><td>2017/18</td><td>4</td></tr> </table>	2019/20	4	2018/19	4	2017/18	4	<p>Four of our six operating segments exceeded 10% of revenue, demonstrating that the Group remains well diversified across its segments. The four segments which are above 10% of revenue in all three years are: Energy &amp; Environment, Rail, Automotive &amp; Industrial and Performance Products. Performance by segment is discussed on pages 47 to 59.</p> <p>Segment diversity for FY 2017/18 has been estimated as Ricardo began reporting the current segmental split in the current financial year, with comparatives for FY 2018/19.</p>	Customers and markets Technology
2019/20	4							
2018/19	4							
2017/18	4							
<b>Customer dependency</b> Number of customers exceeding 5% of revenue  <table border="1"> <tr><td>2019/20</td><td>1</td></tr> <tr><td>2018/19</td><td>2</td></tr> <tr><td>2017/18</td><td>2</td></tr> </table>	2019/20	1	2018/19	2	2017/18	2	<p>The number of customers with whom revenue was generated that exceeded 5% of total revenue has remained consistently low over the last three years. Revenues from one customer represent approximately £46.1m (13%) of the Group's revenue.</p> <p>Whilst we retain a small number of key client relationships, we continue to have a diverse customer base.</p>	Customers and markets Brexit COVID-19
2019/20	1							
2018/19	2							
2017/18	2							



**3 Added value for clients:** we deploy our know-how, experience and application expertise within a given sector and draw on our cross-sector capabilities to provide greater insights and synergies. We employ research and development to provide class-leading technology to our clients.

Performance indicator	Commentary	Principal risks
<b>Research and development spend</b> £m 	R&D spend decreased due to a number of long running Horizon 2020 projects finishing and the challenging automotive marketplace. Our R&D spend focused on research on innovative engineering activities, the development of new technology, tools and processes, particularly in Automotive & Industrial and Energy and Environment, together with continued investment in developers of our software products. Further details of active R&D projects are given on pages 18 to 20.	Technology Customers and markets
<b>Customer satisfaction %</b> Ratings using the net promoter method 	Customer satisfaction has improved over the past three years. The net promoter method, which we implemented three years ago, gives us greater insight into the feedback and has improved the number of scores received.	Contracts Customers and markets

**4 World-class talent:** we promote and sustain a high-performance culture that attracts, develops and motivates a highly skilled, diverse, agile and motivated workforce to deliver on our mission.

Performance indicator	Commentary	Principal risks
<b>Employee and knowledge retention</b> Voluntary employee turnover % per annum 	The level of voluntary attrition has reduced and is consistent with current expectations, as the economic situation impacts the global labour market. We continue to see high demand from around the world for our experienced consultants, engineers and scientists who are experts in their respective fields.	People Brexit COVID-19

**5 Operational excellence:** we maintain efficient and sustainable global operations that are digitally enabled to allow us to leverage data and bring existing processes and practices into a virtual environment. This improves productivity and reduces the environmental impact of the business.

Performance indicator	Commentary	Principal risks
<b>Underlying<sup>(1)</sup> operating profit margin</b> % 	The decrease in the Group's underlying <sup>(1)</sup> operating profit margin reflects inefficiencies from the slow-down in project delivery in the second half of the year. Further details are described in the Financial Review on pages 42 to 46.	Contracts Customers and markets COVID-19
<b>Environment</b> tCO <sub>2</sub> e per employee for scope 1 <sup>(1)</sup> and scope 2 <sup>(1)</sup> emissions 	Scope 1 emissions <sup>(1)</sup> vary based on project mix. We encourage improvements to reduce underlying emissions and to improve effective use of resources on projects. Our emissions per employee decreased this year, primarily due to the impact of COVID-19 on operational activity. Electricity is our largest single energy use; 74% of electricity consumed is from renewable sources.	Laws and regulations

(1) See Glossary on page 201.

# Engaging with stakeholders

Culture, underpinned by our values, plays a fundamental role in the way that we do business and deliver our strategic goals and KPIs. The Board recognises that having robust governance structures in place is vital to decision-making. The Board spends a lot of time listening to and understanding the views of its key stakeholders. When discussing matters at Board meetings these views form an integral part of the decision-making process.

In support of the requirements of section 172 of the Companies Act 2006, we set out below how the Board has considered the key issues of the Group's stakeholders and how we have engaged with these stakeholders on these issues. As required by the UK Corporate Governance Code 2018, the Board considers that its Non-Executive Directors, including the Senior Independent Director, have a good level of understanding of the issues and concerns of major shareholders.

Our stakeholders	Stakeholder issues	How we have engaged
<p><b>Clients</b></p> <p>Clients are at the heart of what we do – every decision we take is to ensure we deliver great service to our clients</p>	<ul style="list-style-type: none"> <li>Operational strength of the Group and the ability to meet customer requirements</li> <li>Ability to provide high-quality services, technical expertise and products</li> </ul>	<ul style="list-style-type: none"> <li>The Board receives regular feedback from <i>Voice of the Client</i> reports completed by our clients</li> </ul>
<p><b>Staff</b></p> <p>The experience and expertise of our staff is essential for the delivery of our strategic objectives – we operate within a culture of openness to ensure that each of our staff is focused on delivering great service</p> <p><i>See Our People section on pages 22 to 25</i></p>	<ul style="list-style-type: none"> <li>Culture and values</li> <li>Wellbeing and flexibility</li> <li>Ethical standards</li> <li>Progression and personal development</li> <li>Remuneration</li> <li>Diversity and inclusion</li> <li>Workforce engagement</li> <li>Health and safety</li> </ul>	<ul style="list-style-type: none"> <li>Focus on “Healthy People, Healthy Business” with the emphasis on physical and mental wellbeing, of major importance during the COVID-19 pandemic</li> <li>Fast and efficient move to more flexible working practices, including home working</li> <li>Group-wide employee engagement survey</li> <li>Annual Senior Leadership Talent Programme, which pulls together senior talent from across the divisions and regions</li> <li>Annual Global “Business Leader Programme” to nurture internal talent</li> <li>Promotion of Women in Engineering via a variety of programmes worldwide</li> <li>Group Code of Ethics, whistle-blowing hotline, regular training</li> <li>Annual performance review and development process</li> </ul>



Our stakeholders	Stakeholder issues	How we have engaged
<p><b>Shareholders</b></p> <p>A key objective of the Board is to create value for shareholders and deliver long-term, sustainable growth</p>	<ul style="list-style-type: none"> <li>• Financial performance</li> <li>• Strategy</li> <li>• Long-term viability</li> <li>• ESG objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Annual General Meeting</li> <li>• Annual Report and Accounts, including enhanced ESG disclosure</li> <li>• Results statements, trading updates and press releases</li> <li>• Regular interaction between the Chief Executive Officer, the Chief Financial Officer and institutional shareholders to foster a mutual understanding of objectives, answer questions and to keep them updated on our performance and plans (one-to-one meetings or group presentations and investor conference calls following our results announcements)</li> <li>• The Senior Independent Director, the Chair of the Remuneration Committee, and the Chair of the Audit Committee are available for discussions with major shareholders, if required</li> <li>• The Chair also looks to shareholder groups' annual voting guidelines to better understand their policies on governance and voting</li> <li>• Regular reviews of major investors' views on company management and performance; Investec and Liberum, the capital markets advisory firms, provide us with regular reviews of major investors' views on company management and performance</li> <li>• Surveys of shareholder opinion following announcements of results</li> </ul>
<p><b>Community/Social Value</b></p> <p>The Board is committed to improving sustainability and helping communities thrive by positively contributing both socially and economically</p> <p><i>See the Environmental, Social and Governance section on pages 26 to 33</i></p>	<ul style="list-style-type: none"> <li>• Economic and operational impact of Group businesses on local communities</li> <li>• Environmental impact of operations, both directly and indirectly</li> <li>• Being able to demonstrate clear ESG policies and how these are measured</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced ESG reporting within our Annual Report and Accounts</li> <li>• Focus on providing services and products which positively impact the environment</li> <li>• Delivery of approximately 15,000 face masks to local communities during the COVID-19 pandemic across the UK and US</li> <li>• Promotion of STEM in schools and colleges</li> <li>• Working with local communities and partnerships to provide business input on economic regeneration</li> <li>• Supporting charitable fund raising activities across the globe</li> </ul>
<p><b>Suppliers</b></p> <p>Building trusted partnerships with our suppliers is important in enabling us to provide the best service to our clients and provides a great platform for our suppliers to grow</p> <p><i>See the Environmental, Social and Governance section on pages 26 to 33 and the Innovation section on pages 18 to 20</i></p>	<ul style="list-style-type: none"> <li>• Sustainable procurement</li> <li>• Potential disruption of the supply chain</li> <li>• Competitiveness</li> <li>• Single sourcing decisions made with clients</li> <li>• Financial performance</li> <li>• Investment in research and development</li> </ul>	<ul style="list-style-type: none"> <li>• We expect our suppliers to operate according to our Code of Conduct, and other policies, and to behave responsibly. This is embedded in our terms and conditions</li> <li>• Our Procurement Policy was published in January 2020</li> <li>• For key manufacturing suppliers, we have active supplier quality assurance teams</li> <li>• We expect our suppliers to operate to ISO9001, ISO14001, ISO27001 and ISO45001 or equivalent professional standards to assure good performance</li> <li>• We encourage landlords and other key suppliers to maximise use of renewable energy</li> </ul>

# Innovation

“Ongoing R&D investment supports Ricardo’s strategy for growth and business diversification. We evaluate the benefit to our clients of our latest innovations, focusing on delivering technology aligned with those enduring market drivers that bring value in volatile market conditions. We understand the needs of our clients and provide solutions both to create opportunities and to help those customers succeed in a world where the megatrends of today are shaping the global economy of tomorrow.”

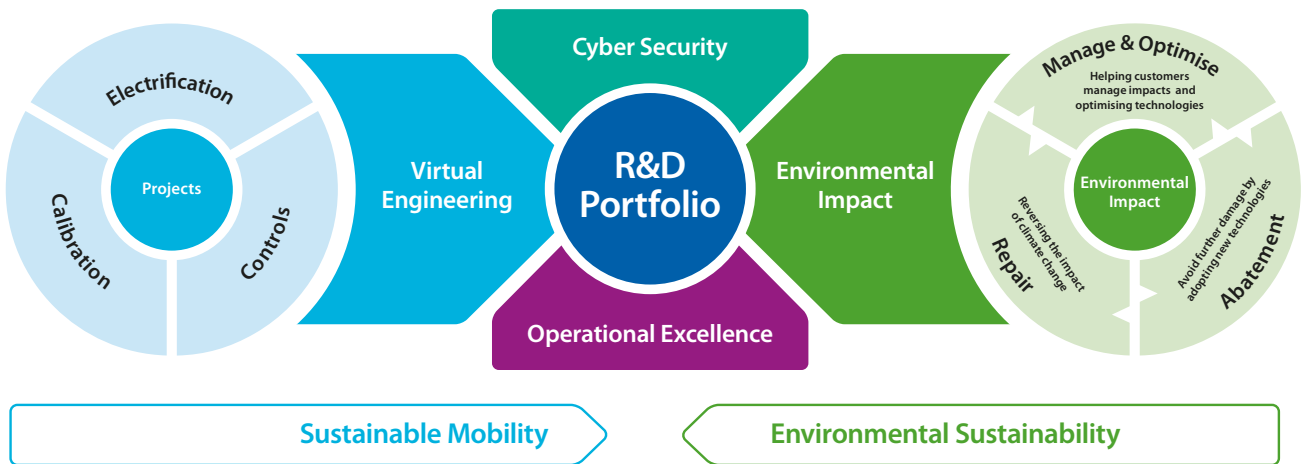
**Mike Bell**

Group Strategy and Transformation Director

In line with Ricardo’s vision and mission, our R&D portfolio extends across a range of market sectors. As the mobility sector moves towards a zero-emissions future, the breadth of Ricardo’s operating businesses offers symbiotic opportunities. The interdependencies between energy, environment, scarce resources, waste, security and mobility are increasing. New roles and responsibilities, collaboration and new digital entrants are changing the landscape to open up new opportunities for technological developments that will *create a world fit for the future*.

Our R&D investment is focused on enhancing our competitiveness and delivering innovative market-leading

services, solutions and software within the context of a sustainable, global marketplace. The impact of digitisation across our market sectors is reflected in our current portfolio with a wider range of applications planned with particular focus on the changes being brought as a result of the COVID-19 pandemic. Software and data are now playing a critical role in our research projects — whether in the context of virtual engineering, modelling, cyber security or artificial intelligence. The largest two areas of R&D are focused on Environmental Impact and Virtual Engineering, with a smaller number of projects in the areas of Cyber Security and Operational Excellence.



The following sections highlight key R&D projects which strive to provide cost-effective solutions to the most pressing issues facing our clients across our operating sectors.

## Environmental Impact: Manage & Optimise Air Quality

**RapidAIR** was developed to fill the gap in the market for a cost-effective, operational, city-scale dispersion model with convenient run-times. When using current modelling tools, run-times in the order of several days or weeks can be expected for city-scale Gaussian models with only a few hundred thousand receptor locations, which are then often interpolated to provide continuous pollution surfaces. In contrast, the RapidAIR model

computes concentrations at more than 100 million discrete receptors in less than 10 minutes. This technology enables policy options to be developed, tested and refined with more speed and responsiveness than ever before. RapidAIR provides an increasingly important decision-support tool for urban planners and authorities as cities attempt to improve air quality using zero- and low-emission zones linked to active traffic management.

## Vehicle Emissions

The **Real-world driving emissions** project uses remote sensing technology to accurately and instantaneously measure the emissions from vehicles on the roads in real time as these



emissions are released into the atmosphere. Remote sensing and modelling support the design and development of effective evidence-based clean-air strategies and low-emission zones to mitigate air pollution problems. In addition, local air quality emissions inventories and air-pollutant concentration modelling can be improved through the use of real-world emissions data from remote sensing. Ricardo now has one of the largest real-world emissions databases for the UK.

## Environmental Impact: Abatement Electrification

The **BattSense** project set out to measure the reversible and irreversible changes relating to battery cells by using other Ricardo IP and know-how for low-energy ultrasonic measurements. This technology was previously employed to measure the thin films associated with bearing lubrication and the change of the speed of sound in materials under load applied in wind turbine bearings. An informed definition of usable battery capacity will reduce pack size, and hence cost, by approximately 7%.

Validation testing of BattSense technology has found accurate state-of-charge tracking even under the extremes of high charge rates and sustained dormancy. Further work is underway applying machine learning to determine the relationships between measurements, chemical phenomena and state of health/charge. The real-time measurements for the ultrasonic devices will then be integrated as a primary measurement within our Battery Management Systems ('BMS') to provide tangible improvements for both cost and durability.

**i-CoBat** is a collaborative project, co-funded by Innovate UK, which aims to address the application challenges relating to heat

rejection and the need for constant temperature control within battery cells by using a synthetic ester specifically developed as a dielectric and efficient coolant, and an optimised battery pack. The main customer benefits of i-CoBat include charging times improved by 40-50% versus a conventional liquid-cooled battery pack; power density output increased by 20-30%; and cell longevity improved by 5-10%. Work packages delivered to date have already helped secure projects with industrial, oil and lubricant clients, together with a commercial deployment in motorsports.

## Electrification Infrastructure

**Active Response** is a joint project with UK Power Networks, an electricity distribution network operator ('DNO'). Ricardo has developed an innovative solution to make better use of existing network assets. The solution employs power electronic devices and advanced automation and optimisation algorithms to move spare capacity around the network as demand changes. Active Response optimises power flows without disrupting the supply of power to customers.

## Renewable energy – Wind

**Ultrasonic Bearing Measurement ('UBM')** is a project to develop a bearing instrumentation system that enables measurement of total roller load and load distribution on a roller-by-roller basis, both key inputs for a new bearing-life model. Both systems have been active in a large energy supplier's trial turbine. The retrofit sensor system will be capable of surviving the harsh conditions faced by offshore wind turbines and can be integrated with existing Condition Monitoring Systems ('CMS') to enable straightforward deployment across new and existing



wind farms worldwide. In conjunction with existing CMS data, Ricardo's UBM solution will offer in-field measurement of wind turbine bearing load conditions and enable operators to spot the conditions that will lead to an early failure.

### Managing Energy Storage

The **TransPower** project explores vehicle-to-grid ('V2G') as one of several smart technologies to benefit distribution networks, helping reduce network reinforcement costs to cope with the increase in electric vehicles ('EVs'). TransPower intends to encompass the necessary work to understand the value of energy storage and further prepare for sources of network flexibility such as V2G. A greater understanding and

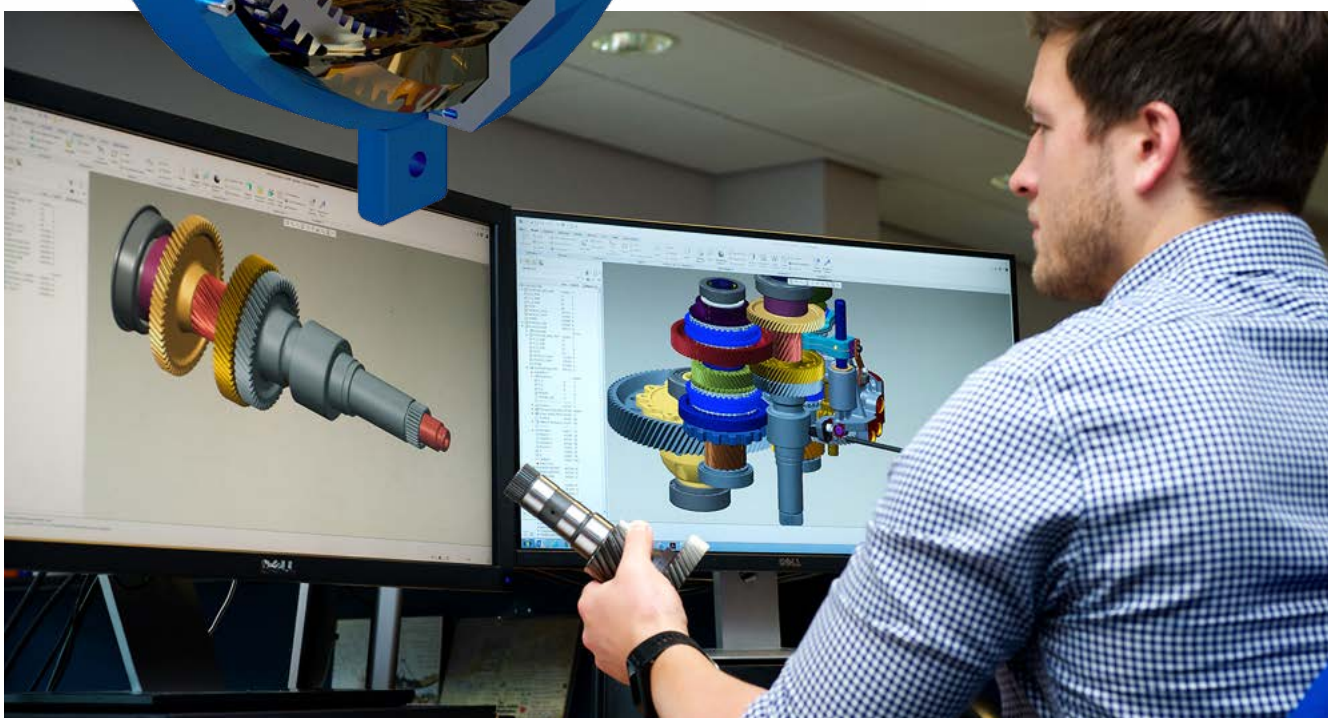
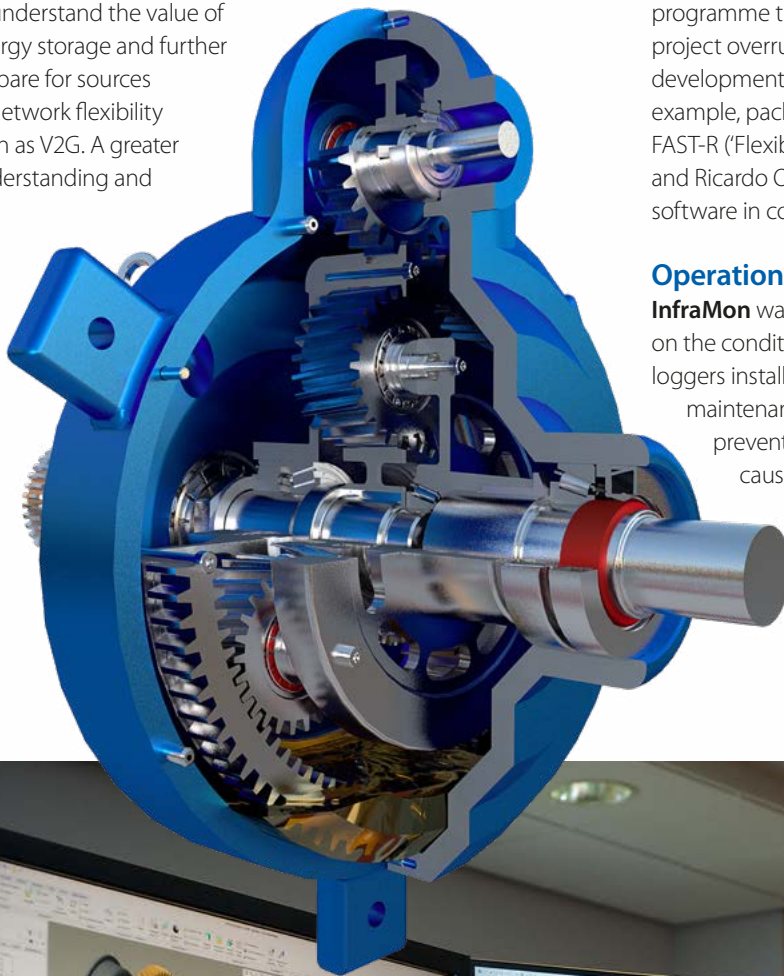
use of mobile battery assets (vehicles) have the potential to defer network reinforcement and support network resilience, facilitating the connection of additional loads and low-carbon technologies. It is estimated that the benefits of V2G could deliver a customer benefit in the order of £450 per vehicle annually.

### Virtual Engineering

The **Virtual Transmission System Calibration** project has developed a virtual transmission system calibration process which offers the chance to shift left (i.e. to reduce the overall programme timing of) the calibration in order to mitigate project overruns due to dependencies. Typically, transmission development projects suffer delays arising from late changes (for example, packaging constraints). The process leverages Ricardo's FAST-R ('Flexible Advanced Software for Transmission control') and Ricardo Objective Assessment and Monitoring ('R-OAM') software in combination with a new simulation model.

### Operational Excellence

**InfraMon** was developed to provide continuous information on the condition of railway tracks, using sensors and data-loggers installed on board in-service trains. Data is reported to maintenance teams via customised dashboards, allowing preventative action to be planned before track faults cause serious disruption to services. InfraMon combines cellular communication, Global Navigation Satellite Systems ('GNSS') positioning, and sensor technologies coupled with a central data processing server to deliver analytics and operational dashboards for track geometry, railhead defects and ride comfort.





# Selected global and regional regulations

## Global



### Paris Climate Agreement:

Keep global temperature rise below 2°C above pre-industrial levels and pursue efforts to limit the rise to 1.5°C



Reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008 levels



Carbon Offsetting and Reduction Scheme for International Aviation ('CORSIA')

### US



26-28% reduction by 2025 compared to 2005 levels prior to withdrawal from Paris Climate Agreement<sup>2</sup>



PM<sub>2.5</sub> 12 µg/m<sup>3</sup> 1yr average  
NO<sub>2</sub> 100 µg/m<sup>3</sup> 1yr average



Federal Water Pollution Control Act

### UK



57% reduction by 2030 compared to 1990 levels  
Net Zero by 2050



As for EU



Transposition of the EU's Water Framework Directive<sup>3</sup>

### EU



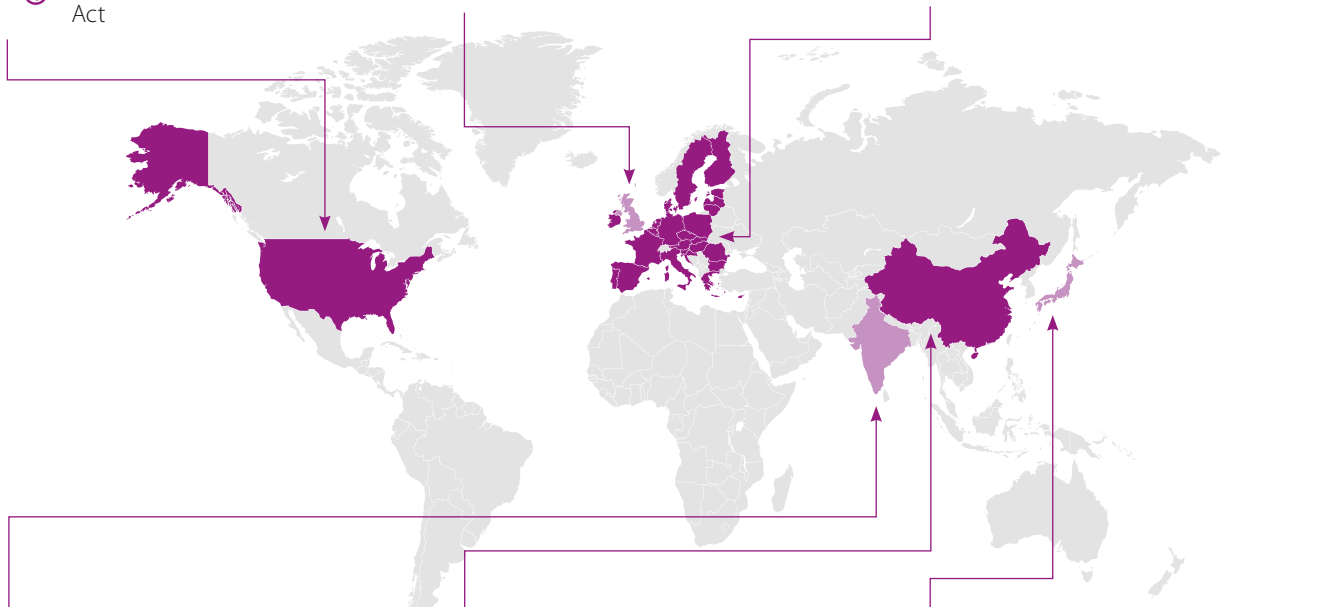
40% reduction by 2030 compared to 1990 levels<sup>1</sup>  
80-95% reduction by 2050<sup>1</sup>



PM<sub>2.5</sub> 25 µg/m<sup>3</sup> 1yr average  
NO<sub>2</sub> 40 µg/m<sup>3</sup> 1yr average



Water Framework Directive



### India



33-35% below 2005 emissions intensity of GDP by 2030



PM<sub>2.5</sub> 40 µg/m<sup>3</sup> 1yr average  
NO<sub>2</sub> 40 µg/m<sup>3</sup> 1yr average (30 µg/m<sup>3</sup> in ecologically sensitive areas)



Water (Prevention & Control of Pollution) Act

### China



Peak CO<sub>2</sub> emissions by 2030



PM<sub>2.5</sub> 35 µg/m<sup>3</sup> in Class 1 areas, 70 µg/m<sup>3</sup> in Class 2 areas 1yr average  
NO<sub>2</sub> 40 µg/m<sup>3</sup> in Class 1 areas, 80 µg/m<sup>3</sup> in Class 2 areas 1yr average



Water Law of the People's Republic of China

### Japan



26% reduction 2013 levels by 2030



PM<sub>2.5</sub> 40 µg/m<sup>3</sup> 1yr average  
NO<sub>2</sub> daily limit value 75 - 113 µg/m<sup>3</sup>, no annual limit value



Water Pollution Control Law

1. The EU is currently proposing revised targets of 50-55% reduction by 2030 compared to 1990 and Net Zero emissions by 2050 – these have not yet been enshrined in legislation

2. The US expressed its Paris Climate Agreement target for 2025 compared to 2005 levels. This is equivalent to a 10-17% reduction against 1990 levels by 2025. The US has now withdrawn from the Paris Climate Agreement, so these figures may not stand

3. The EU's Water Framework Directive has been transposed for the UK into (i) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, (ii) The Water Environment and Water Services (Scotland) Act 2003 and (iii) The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017



Shipping



Aviation



Greenhouse Gas ('GHG')



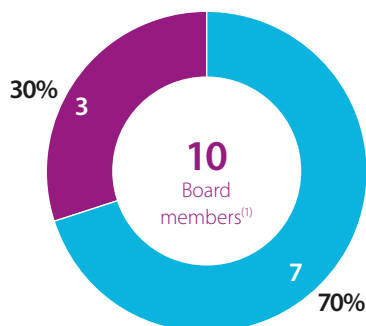
Air



Water

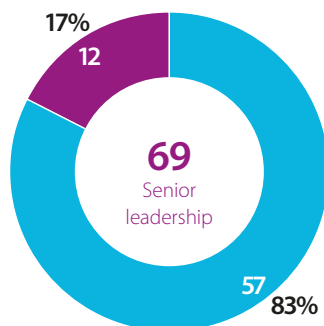
# Our people

Board members



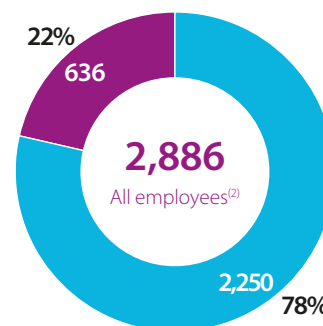
(1) Includes Company Secretary

Senior leadership



■ Male ■ Female

All employees



(2) Excludes contractors

Who would have thought that the strapline of “Healthy People, Healthy Business” would take on such a literal meaning this year? Clearly the COVID-19 crisis is having an impact not only on the financials of our business, but even more so on our people.

The pandemic has dramatically accelerated the already ongoing trend towards more flexible working, in terms of both place and time. The lockdown regulations in nearly all of the countries in which we operate have forced most staff to work from home; this, along with the closure of schools and the need to factor in childcare requirements, has made a more flexible distribution of working hours necessary.

It is remarkable how seamlessly our teams have embraced these changes, and it is heart-warming to see how much our employees have been looking out for each other in these difficult times. There has been impressive creativity around setting up provisional workspaces as well as in coming up with team activities in spite of social distancing: the anecdotal

evidence of a lot of our colleagues still finding time to volunteer in their local communities proves once more that, as our CEO maintains, “good, good people” are the heart of our business.

Despite the COVID-19 crisis taking a lot of management time and attention, we have not lost focus on our ambitions as an employer. We want all our employees to be happy and engaged throughout their time with us – not just in terms of the culture of the organisation and their ongoing personal development, but also when it comes to competitive remuneration and benefits packages. The reduction in our voluntary attrition rate from 15% in FY 2018/19 to 11% in FY 2019/20 (which is in line with an expected and healthy attrition level for a consultancy) shows that our hard work is paying off.

To further assess the effectiveness of these efforts, we have conducted a Group-wide Employee Engagement Survey, based on the Gallup 12 questionnaire. The results are generally positive, with an overall average score of 3.8 out of a possible 5 and a



## Ksenija Jelic

Head of the Shared Services Centre, Ricardo Prague

The Shared Services Centre in Prague is an administrative and financial hub for Ricardo Automotive & Industrial’s EMEA business. I have a team of thirty based in Prague and the UK, including experts in fields ranging from accounts payable, project and general accounting, purchasing, to travel planning and banking. Our mission and our passion are to deliver cost-effective, customer-oriented, expert financial and administrative support to the business.

With a Masters in Finance Management, I have 22 years’ experience in finance, procurement and business support, in sectors including public services and energy. I joined Ricardo in 2017 to develop the Shared Services Centre and find it to be the most exciting company that I have worked for. I know that Ricardo is making a really positive impact on the way society will work, travel and live in the future. I also enjoy the company’s supportive, positive and open-minded corporate culture, which values professionalism and excellence. At Ricardo I feel that I am in the right place.



## Marques McCammon

President/Managing Director Ricardo, Inc

Coming to Ricardo is an exciting move for me. I have known Ricardo for nearly as long as I have been in the auto business, having contracted work to the US team when I was at Chrysler, consulted with them when I was in the Board of Advisors for the Automotive Xprize, and partnered with them while at Intel/Wind River. My hope is that I can bring a critical outside-in view of the business that will help to guide our positioning, as well as an appreciation for the market challenges and opportunities that are unique to the North American market.

Since joining the business in October 2019, my focus has been on establishing a mindset of growth within the US operation, challenging every employee to think big but stay focused. We want to blend the discipline of scale and process that is inherent in Detroit's automotive complex, with the agility and rapid innovation that is indicative of California's Silicon Valley.

70% response rate, with slight variations between the divisions. The survey will continue on a regular basis. Recent restructuring activities, which were necessary to right-size the teams in some divisions, have clearly impacted the results.

Analysis of the survey data shows that across all divisions our people value their colleagues' commitment to quality work and the overarching culture of excellence that Ricardo stands for. We also score highly on clarity of responsibilities and the

expectations of individual job roles, something that has been an area of focus in recent years. It was also confirmed that there is a sense of genuine care displayed by managers throughout the business, which for us is reassurance that our management training as well as our promotion and selection processes are succeeding in putting the right people into leadership roles and supporting them well. Of course, there are also areas that we would wish to further improve. Individual personal development



The team based at Ricardo Shanghai





The Ricardo Knowledge team responsible for the launch of the new RiCK™ online research product

and recognition seem to be topics we need to pay even more attention to. It will now be a great opportunity for the divisions to share their best practices and to address joint issues together.

The importance of ongoing feedback and recognition is highlighted in our Senior Leadership Talent Programme, which started in 2018 and which we are running for the third time in 2020. The programme pulls together senior talent from across the divisions and regions to work together on improving leadership skills and building a solid network around the business. It consists of a mixture of classroom training and workshops with various executives of the business and is aimed at the elite of our-up-and-coming leaders. The programme

is complemented by our global “Business Leader Programme” which focuses on the business skills necessary for SLT or executive level positions. These leadership development activities aim to further increase the bench strength and successor readiness as part of our Senior Leadership Team and Executive Succession planning. This is an exercise we take very seriously, not only from the perspective of risk management but also to nurture our internal talent and provide career perspectives up to the highest levels in the organisation. We are very keen to strike the best possible balance between internal succession and a necessary influx of diverse external talent, bringing different industry experience and viewpoints to the table.

In more general terms, our people activities revolve around seeing employees as individuals rather than “resources”. Our main focus has continued to be our apprentice, graduate and young professionals’ schemes: the recruitment of the best people who excel technically and are also a good fit with our cultural values of Respect, Integrity, Passion, Creativity & Innovation. In addition, a redesigned on-boarding process makes new employees feel welcome and part of the team from the



**Andrea Suppa,**  
Manager, Systems, Controls and Virtual Engineering,  
Ricardo Shanghai

**I joined Ricardo nearly five years ago from an Italian automaker, and initially worked in the UK on hybrid control systems before moving to Ricardo China in 2017.**

**The Chinese market is very dynamic, challenging and continuously changing. Both as an organisation and at an individual level it is important to keep adapting and improving how we work, given global market conditions and increasing customer expectations.**

**I’m not a nine-to-five kind of person, and the environment in Shanghai – which challenges me every day with new and diverse tasks – is one that inspires me and helps me to do my job with passion. At Ricardo China I feel free to express my ideas and develop them, always looking at what I’m doing as if it was my own company – and motivating others to think strategically about everything they do.**



**Kimberly Matenchuk,**  
Managing Director of Ricardo Software

I joined Ricardo early in 2020 from GE Digital where I had grown the business substantially across the automotive, food and beverage, consumer packaged goods, chemical, and life sciences sectors.

Digitalisation is of crucial importance to the future of Ricardo and will affect almost every aspect of the Group's future business, from data analytics to virtual product development and virtual consulting. It has been great to join Ricardo at this point in its history and help shape the future direction of the commercial software business.

I have a great team at Ricardo Software and together we are developing the enabling simulation for the next generation of electrified and ultra-low and zero-emissions vehicles. More than just helping define the future of mobility, we are also seeking opportunities in adjacent industrial sectors to broaden the market for our products and technology, while also supporting the virtual engineering and consulting work of the wider Ricardo Group.

day they sign their contract with us. We are providing training and development to allow employees to give the best possible performance based on their strengths, and we continuously review and adjust our policies and processes as well as our remuneration structure.

The focus on "Healthy People, Healthy Business" last year provided a special emphasis on employee wellbeing. The increased provision around physical and mental health gave us a great head start to effectively respond to the COVID-19 situation. In fact, quite a few employees from our teams in Asia, which was right at the peak of the crisis when the Gallup 12 Employee Survey took place, commented on how well they thought Ricardo had managed the situation, showing great flexibility and supporting staff on a personal level throughout. Once we have left the acute phase of this pandemic behind us there will be opportunity to look more closely at practices such as large-scale home working – which could potentially reduce fixed office costs, as well as broaden flexible working practices to take forward into the "new normal" business environment. In that sense, the crisis has fast-forwarded a development which would have taken us years to achieve to the same level under "old-normal" conditions.

The excellence of our people is not only supported by our wellbeing programmes: it also has its roots in our culture of diversity and inclusion. We celebrate different cultures and viewpoints and believe that our diverse workforce is the key to our success. The promotion of *Women in Engineering* is a cause that is particularly close to our heart, and we promote it with a variety of programmes across the globe. In terms of gender diversity, good progress was made during the year: particularly positive is the increase in women in senior leadership positions from 11% to 17%.

If the last year has taught us one thing, it is that the power



of nature will still outweigh any efforts of technology. It has emphasised more clearly and more convincingly than ever before the importance of our vision of *Creating a world fit for the future* – and it has shown us that Healthy People do indeed make a Healthy Business.

# Environmental, Social and Governance ('ESG')

## Our approach to managing Environmental, Social and Governance ('ESG') matters

We understand the increasing importance of recognising and mitigating our impact on communities and the environment. Our vision *Creating a world fit for the future* is realised through a mission which integrates the economic, environmental and social aspects of sustainable development into our strategy, operating model and significantly, into the work which we undertake on behalf our customers. We recognise that effective management of ESG issues is an integral part of robust governance and business strategy with a link to financial performance and long-term business model resilience. We are increasing our use of ESG KPIs to aid transparency and measure our progress quantitatively, especially relating to environmental impact.

Ricardo has a proactive and engaged approach to ESG, which is an essential part of our social value and the delivery of our strategic objectives outlined on page 5. The environment is at the heart of our strategy and is embedded in both what we do and the solutions we deliver, as shown on page 1:

- Our core activities of access to clean air and water; decarbonised and clean transport; and Net Zero energy and industry;
- Our enablers all provide the capability to deliver on our ESG agenda

We support these core activities with research and development to enhance our capabilities. These are described on pages 18 to 20. We rely on the innovation, the talent and the technical and communication skills of our employees, and we invest in their development for the benefit of all our stakeholders. Our values and policies are designed to ensure that we and our suppliers operate ethically and honestly, and that we meet our human rights obligations.

We have a strong connection with many of the United Nations' Sustainable Development Goals ('UN SDGs'), published on [www.un.org/sustainabledevelopment](http://www.un.org/sustainabledevelopment). These connections link to our core activities, our internal operations and our stakeholders, particularly the communities within which we operate.

Opposite, we set out the UN SDGs which we strongly connect with and outline how our core activities respond to each of the challenges.

## Key ESG topics

The table below details a number of key ESG topics and highlights our activities in the area.

	ESG topics	Highlights
<b>Company</b>	Governance and management of ESG matters	Compliance with the provisions of UK Corporate Governance Code 2018 Board oversight of ESG topics Continued inclusion in FTSE4Good index
	Environmental stewardship and addressing climate change	Implemented our Task Force on Climate-related Financial Disclosures (TCFD) recommendations Climate Standards Disclosure Board published a case study on Ricardo's scenario planning
	Managing our environmental footprint	Certification to ISO 14001 for 35 sites (95% of employees) Reporting of GHG emissions (externally verified in accordance with ISO14064-3:2006). Strategy to achieve Net Zero GHG status by 2030
	Managing ESG-related risks	TCFD activities have identified a number of climate-related risks Climate-related risks are subject to a bi-annual board review
<b>Customer</b>	Climate change/environmental projects	27% of our revenue is strongly driven by climate change or the environment 56% of our revenue is driven by climate change or the environment to some degree
<b>Employee</b>	"Healthy People, Healthy Business"	Focus on employee well-being – increased since COVID-19 Improving employee engagement – survey based on Gallup 12 (score 3.8/5)
	Human Rights	Support for Universal Declaration of Human Rights
	Diversity	Diversity – increase in women in senior leadership positions from 11% to 17%.
	Health & Safety	Certification to ISO 45001 for 35 sites (95% of employees) Low reportable accident levels
<b>Suppliers</b>	Sustainable procurement	Introduction of sustainable procurement policy (January 2020) and sustainable procurement policy targeted for September 2020
<b>Society</b>	COVID-19 contribution	Design and manufacture of 10,000 protective face shields for NHS workers, and another 5,000 in the US
	Local communities	Active in communities working to promote Science, Technology, Engineering and Maths (STEM) in schools and colleges



# SUSTAINABLE DEVELOPMENT GOALS

## Sustainable Development Goal

### Core activities

### The way we operate

### Stakeholders

<p><b>3</b> GOOD HEALTH AND WELL-BEING</p> 	<ul style="list-style-type: none"> <li>• Decarbonised and clean transport solutions</li> <li>• Access to clean air</li> <li>• Secure, connected mobility solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of a safe working environment, well-being programmes and employee benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Governments and local communities, employees and their families</li> </ul>
<p><b>6</b> CLEAN WATER AND SANITATION</p> 	<ul style="list-style-type: none"> <li>• Access to clean water</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring water use on larger sites</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, governments and local communities</li> </ul>
<p><b>7</b> AFFORDABLE AND CLEAN ENERGY</p> 	<ul style="list-style-type: none"> <li>• Net Zero and carbon-neutral solutions</li> <li>• Decarbonised and clean transport solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing energy consumption and maximising renewable energy sourcing</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, governments and local communities</li> </ul>
<p><b>11</b> SUSTAINABLE CITIES AND COMMUNITIES</p> 	<ul style="list-style-type: none"> <li>• Decarbonised and clean transport solutions</li> <li>• Net Zero and carbon-neutral solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Working in partnerships with local communities around our larger sites to reduce collective energy use</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, governments and local communities, employees and their families</li> </ul>
<p><b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION</p> 	<ul style="list-style-type: none"> <li>• Net Zero and carbon-neutral solutions</li> <li>• Decarbonised and clean transport solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Net Zero plan and targets which will reduce energy and resource use</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, businesses, governments and local communities</li> </ul>
<p><b>13</b> CLIMATE ACTION</p> 	<ul style="list-style-type: none"> <li>• Decarbonisation of transport</li> <li>• Access to clean air</li> <li>• Net Zero and carbon-neutral solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Climate change risk management</li> <li>• Net Zero plan and targets</li> <li>• GHG reporting and reducing carbon footprint</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, governments and local communities</li> </ul>
<p><b>14</b> LIFE BELOW WATER</p> 	<ul style="list-style-type: none"> <li>• Access to clean air and water</li> </ul>	<ul style="list-style-type: none"> <li>• Active management of waste streams on our sites</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, businesses, governments and local communities</li> </ul>
<p><b>15</b> LIFE ON LAND</p> 	<ul style="list-style-type: none"> <li>• Access to clean air and water</li> </ul>	<ul style="list-style-type: none"> <li>• Active management of waste streams on our sites</li> <li>• Encouraging low carbon travel to work</li> </ul>	<ul style="list-style-type: none"> <li>• Clients, businesses, governments and local communities</li> </ul>

## Governance and management of ESG matters

The Board is committed to ensuring that the highest standards of governance are maintained throughout the Group. The Board reviews key elements of ESG on an annual basis. Wider aspects of corporate governance including how we comply with the provisions of the UK Corporate Governance Code 2018 are described on pages 90 to 96. In January 2020 we refreshed many of our policies that cover the ESG agenda. They were all made public via our website and are referenced in this report. This gives our stakeholders increased transparency as regards our commitments and the ownership for delivery within the business.

To underline the importance of integrity in all relationships between employees and stakeholders, we have ethics, fraud-prevention and whistleblowing policies, which are communicated to all employees. A summary of these is communicated externally through our Code of Conduct, which includes the policy elements required to meet our human rights obligations.

Under our ethics policy we do not permit bribery, anti-competitive or corrupt business practices in any dealings. Under our fraud-prevention and ethics policies, which cover anti-corruption matters, we do not allow intentional acts by one or more individuals within the business to use deception, bribery or theft to gain unjust or illegal advantage. Under our whistleblowing policy we provide a procedure for any employee to raise any malpractice concerns in an appropriate manner, with protection to the whistleblower. Ethics and whistleblowing policies and reports are reviewed annually by the Audit Committee. We have an ongoing programme of training for new employees as part of induction and refreshers for existing employees.

## Modern slavery

We continue to adhere to the requirements of the Modern Slavery Act 2015 and have published an updated statement for this financial year on our website. This subject is reviewed annually by the Audit Committee. Our procurement policy requires our suppliers to be compliant.

## Environmental stewardship and addressing climate change

Clear scientific consensus exists that the Earth's climate is changing, and that greenhouse gas ('GHG') emissions from human activities are a principal cause. For financial markets, climate change is accepted as a non-diversifiable, principal risk. At Ricardo, we understand that the implications of unchecked emissions and the consequent global warming will be severe. Climate change is pivotal to our ESG thinking, and to the Group's strategy.

In common with many organisations, Ricardo already measures and discloses elements of its impact on the environment, in particular via GHG emissions reporting (page 31). We have chosen to start the process of disclosing the impact of climate change on our business.

## Taskforce on Climate-related Financial Disclosures

The Task Force on Climate-related Financial Disclosures ('TCFD') recommendations are a global framework. The project was initiated by the Financial Stability Board ('FSB'), designed to enable publicly listed companies to better understand and disclose the impacts of climate change on their businesses. The TCFD recommends that businesses consider both the opportunities and the risks associated with climate change. The TCFD recommendations aim to improve the disclosure of information to allow investors, regulators and other stakeholders to better assess and manage the risks and opportunities resulting from climate change. Whilst the recommendations are currently voluntary, Ricardo believes the recommendations align strongly with our vision and mission and aims to become a leader in best practice in the sectors we operate in.

## TCFD progress to date

In November 2019 we initiated a Group-wide programme based on official TCFD recommendations. The overall aims of our exercise were:

- To build on the climate-related features of our existing long-term strategy;
- To fully explore our climate-related opportunities and risks, in line with the TCFD ethos; and
- To develop class-leading capabilities, enabling us to support our clients' own TCFD journeys.

Our programme included an exploration of future climate-related scenarios, prioritisation of key risks and opportunities, assessment of potential business impacts, and systematic distillation of recommendations. This complex undertaking was achieved using the Group's diverse skill-sets – climate specialists, scenario-planning experts and management consultants. Using external climate scenarios and impact assessments as inputs, we developed four bespoke scenario narratives, each describing a different hypothetical world around Ricardo in 2035. Brief summaries of these scenarios follow:

- *Creative Scavengers*. The world is on a 4°C temperature-rise trajectory through 2100, resulting in significant acute and physical risks. This scenario assumes a lack of cohesive international policy intervention, and sporadic technological progress;
- *Digitopolis*. The world is on a 2-3°C temperature-rise trajectory through 2100, with commensurate acute and chronic physical risks. This scenario assumes some international policy intervention, progress in energy efficiency, and a reduction in travel enabled by digital technologies;
- *Technopolis*. Similarly, the world is on a 2-3°C temperature-rise trajectory through 2100, with commensurate acute and chronic physical risks. This scenario assumes little international co-operation on policy interventions. Instead, major breakthroughs in renewable energy technologies enable some climate change mitigation; and

- *Ecopolis*. The world is on a less than 2°C temperature-rise trajectory through 2100. Chronic physical risks are being addressed, although some extreme weather events remain inevitable. This scenario assumes cohesive international policy interventions and significant deployment of a broad suite of effective renewable energy solutions.

The Climate Standards Disclosure Board has published a Ricardo case study about the challenges of scenario planning for this application. It can be found on the TCFD website (see <https://www.tcfhub.org/case-study/>). Our work has resulted in a clear set of recommendations, which we have aligned to the four official TCFD recommended disclosure themes.

TCFD Theme	Progress to date
Governance	<ul style="list-style-type: none"> <li>• The inclusion of a climate change section in the annual report represents the start of Ricardo's disclosure journey.</li> <li>• Climate opportunities are reviewed at Board level on an annual basis as part of our strategy review and budget setting processes.</li> <li>• Climate-related risks are reviewed at Board level as part of our bi-annual risk review process.</li> </ul>
Strategy	<ul style="list-style-type: none"> <li>• Ricardo's ESG agenda is aligned to our vision and mission.</li> <li>• Ricardo's strategy includes specific themes that relate to climate change and its mitigation: Digitalisation, decarbonising transportation, and cross-divisional solutions (see below).</li> </ul>
Risk management	<ul style="list-style-type: none"> <li>• Our TCFD activities have enabled us to assess and overlay further climate-related risks onto our enterprise risk register</li> </ul>
Metrics and targets	<ul style="list-style-type: none"> <li>• To supplement the Group's existing GHG metrics and Net Zero strategy, we have committed to sharing an additional climate change metric with stakeholders. In order to provide increased insight on climate change as a driver for the business, we have analysed Ricardo's own revenue stream and split this revenue according to the extent to which each component aims to address an environmental or climate-change issue. The results of this analysis are shown below.</li> </ul>

### Opportunities to enable a *world fit for the future*

We conducted TCFD activities in parallel with a long-term strategic planning project for the Ricardo Group. Indeed, both activities used common future scenarios. Our TCFD journey highlighted six key areas of opportunity for the Group, including focusing on the power and energy sectors, leveraging our understanding of global regulatory frameworks, and providing solutions outside the transportation sector. Importantly, the remaining three opportunity areas show clear overlap with our strategy (set out on page 1):

- *Digitalisation of products and services*. Our strategy includes a strong digitalisation focus. Not only will this drive technical innovation, it will also enable Ricardo and its stakeholders to reduce overall emissions.

- *Decarbonising transportation*. Projects focused on reducing the environmental impacts of transportation have been a cornerstone of the Ricardo business for decades. The development of mobility solutions with reduced life cycle GHG emissions is a critical feature of Ricardo's strategy; and
- *Cross-divisional solutions*. Ricardo's operating segments operate in market sectors with increasing synergies. Joining up these capabilities to enable systems thinking, as well as comprehensive technical delivery across complex client programmes, is an essential part of our future strategy.

### Managing ESG-related risks

Ricardo's TCFD activities resulted in the identification a number of climate-related risks, including the following:

- *Physical risks to our facilities*. The growing severity of climate change and variability causing physical disruption (for instance, flooding) to business;
- *Climate liability risks*. Risks associated with either increases in client litigation, a reduction in consulting budgets, or an increase in litigation on Ricardo itself. Ricardo's existing risk register includes an assessment of risks to our business from litigation;
- *Reputational risks*. As investors and stakeholders place more focus on climate change, a perceived lack of action could result in reputational damage;
- *Changes in client requirements driven by climate change*. Climate change could result in changing demand for certain products and services. Our strategy includes a strong decarbonisation focus; and
- *Changes in regulations relating to climate change*. As environmental and emissions regulations tighten, the risk of penalties for non-compliance increases. As a provider of services relating to changes in global emissions standards and environmental legislation, we are in a strong position to anticipate and respond to emerging regulatory risks.

We have actioned the mitigation of these risks via our existing enterprise risk management processes. At present, none of the identified items are considered principal risks. Further information on our risk management and principal risks to the business is shown on pages 36 to 39.

### Climate change and environmental revenue

Ricardo delivers many positive environmental outcomes as a result of the work we undertake. These include:

- Ricardo- and customer-funded engineering projects to develop low-emission and high-efficiency technologies for incorporation into products around the world;
- Lower carbon usage through the delivery of engineering projects that lead to more efficient consumer products being manufactured by our customers;
- Environmental consultancy, largely undertaken by Ricardo Energy & Environment, which includes: excellence in thought leadership around economic, societal and environmental interactions; extensive understanding of the climate change challenges facing organisations, including scarcity of natural



resources, strategic sustainability and energy management; deep understanding of policy drivers, environmental strategy and economics, which provides insight and project delivery for business and industry; and modelling and data management to identify and realise value for organisations; and

- Improvements in operating efficiency carried out by Ricardo Rail for rail operators and rolling stock manufacturers.

These products and services will have an impact on future levels of emissions, waste, energy usage, water consumption and noise across many of the markets we serve. The cumulative benefits of projects we complete each year save many multiples of our operational carbon footprint over the service life of the products we engineer and the service we provide to our clients.

In addition to the climate change/environmental impact, we also categorise the revenue relating to safety as this has societal benefits. For instance, Ricardo Rail's expertise and activities in functional safety have significant societal benefits.

Ricardo's revenue streams have been analysed to assess how strongly they are driven by climate change and the environment. For each item of revenue, we have applied one of the following classifications:

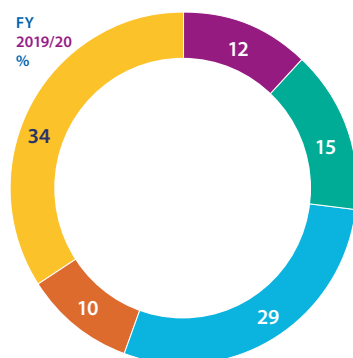
- Revenue generated which is specifically intended to address climate change;
- Revenue generated which is driven by a significant environmental issue;
- Revenue generated which has environmental benefit as one of its drivers;
- Revenue generated which relates to safety in terms of both assurance and mobility improvements; and
- None of the above

This analysis shows:

- 27% of our revenue is strongly driven by climate change or the environment;
- 56% of our revenue is driven by climate change or the environment, to some degree;
- 10% of our revenue relates to the societal benefits associated safety; and
- Our business activities are well aligned to our vision: *Creating a world fit for the future*

### Climate change and environmental revenue contribution

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



Sediment and water quality sampling as part of an investigation at Heathrow

### Managing our environmental footprint

We are committed to managing our environment footprint and reducing it to a minimum, as well as ensuring that our services have a positive impact on society and the communities where we are based. The Board's commitment to this is embodied in our environmental policy (available internally and via our website) which covers:

- Relevant UN Sustainable Development Goals;
- Delivering services that enable strategic improvements for our customers and the end-users of their products and services;
- The need for continuous improvement; and
- The desire to be responsible members of the local communities in which Ricardo operates.

The impact of our operations, particularly testing and manufacturing, are the largest contributors to our operational carbon footprint and GHG emissions. Our testing for customer- and research-funded programmes primarily uses fuels and electrical energy; in addition, there is energy required for heating some of our sites. Our manufacturing energy use is predominantly power for machine tools and assembly facilities and gas used in our heat treatment plant. Our Scope 2<sup>1</sup> use is mainly electricity. We have measured our Scope 3<sup>1</sup> emissions

<sup>1</sup> See glossary on page 201

from air travel. All our Scope 3 conclusions this year have had to be drawn from first-half data due to the distortion caused by COVID-19 driven travel bans.

We comply with the Companies Act 2006 (Strategic and Directors' Report) Regulations 2013 on GHG emissions and have stated our comparative history in our Strategic Performance on page 15. We comply with Streamlined Energy and Carbon Reporting ('SECR') via our disclosures below under the Greenhouse Gas Protocol. As this requires the inclusion of fuels used in engine and vehicle testing, variability in results year-on-year can be expected due to the varied mix in types of test and engine size.

Projects to reduce energy consumption and manage waste responsibly are actively encouraged and have become more important as unit fuel costs increase; waste streams have also become more significant as the manufacturing activities of our Performance Products division have grown.

We focus our operational carbon footprint improvements on underlying energy efficiency prior to the use of fuels for testing, which varies based on client requirements. We continue to use tonnes of carbon dioxide equivalent ('tCO<sub>2</sub>e') per employee as an intensity measure.

## Greenhouse gas emissions

	FY 2019/20	FY 2018/19	FY 2017/18 Scope 1 and scope 2 baseline
<b>Emissions - tCO<sub>2</sub>e ('000s)</b>			
Scope 1	<b>4,343</b>	4,914	8,638
Scope 2 – Location based	<b>4,981</b>	6,187	8,221
Scope 2 – Market based	<b>2,016</b>	2,635	4,175
Scope 3 – Air travel	<b>3,967</b>	No data	No data
Total – Location based (Scopes 1 and 2)	<b>9,324</b>	11,101	16,859
Total – Market based (Scopes 1 and 2)	<b>6,359</b>	7,549	12,813
Total – Location based (Scopes 1,2,3)	<b>13,291</b>	N/A	N/A
Total - Market based (Scopes 1,2,3)	<b>10,326</b>	N/A	N/A
Scope 3 - Air travel base line	<b>6,015</b>	N/A	N/A
<b>Intensity Measures</b> (tCO <sub>2</sub> e per employee)			
Scope 1 <sup>(1)</sup>	<b>1.42</b>	1.66	2.78
Scope 2 – Location based	<b>1.63</b>	2.09	2.65
Scope 2 – Market based	<b>0.66</b>	0.89	1.35
Scope 3 - Air travel	<b>1.30</b>	No data	No data
Total – Location based (Scopes 1 and 2)	<b>3.05</b>	3.76	5.43
Total – Market based (Scopes 1 and 2)	<b>2.08</b>	2.55	4.13
Total – Location based (Scopes 1,2,3)	<b>4.36</b>	N/A	N/A
Total - Market based (Scopes 1,2,3)	<b>3.38</b>	N/A	N/A
<b>Electricity consumption MWh</b>			
Electricity consumed (all sources)	<b>17,455</b>	20,395	24,113
Renewable energy consumed	<b>12,973</b>	14,579	16,174
Percentage of renewable electricity used	<b>74%</b>	71%	67%

- The operational control test is applied to determine if an emission is within Scope.
- The inventory has been compiled according to the GHG Protocol and internal procedures with the exception that individual gases are not reported. Our GHG emissions for FY19/20 have been verified by Lloyds Register in accordance with ISO 14064–3:2006, 'Specification with guidance for validation and verification of greenhouse gas assertions'.
- As this is the first year of reporting base year data is not currently being included. Where necessary previous year data has been restated to improve quality. Some data includes estimates, which may be updated at a later time when more accurate data is available.
- Emission factors used for fuels and UK location-based electricity are based on UK BEIS/DEFRA conversion factors for 2020. Electricity emissions factors used for location-based calculations are the most recent IEA factors for the country. Electricity emissions factors used for market-based calculations where renewable electricity is not supplied are the most recent year GWP residual mix factors from aib-net.org for countries in Europe and UK and location based for other countries
- Air travel emissions are calculated by Susterra using bespoke factors that take account of route, class of travel, airline and aircraft type.
- Some de minimis data has not been included; this includes very small sites, bottled gases and refrigerants used to top up cooling and air conditioning plants, fire extinguishants other than FM200 and sulphur hexafluoride (SF<sub>6</sub>) associated with switchgear.
- Our UK operations are our biggest consumer of electricity, where we directly procure electricity from renewable sources for our largest sites.
- The sale of the DTC<sup>1</sup> test facility had no material impact on this year's emissions due to the timing of the sale.

<sup>1</sup> See glossary on page 201



### Net Zero strategy

Ricardo intends to achieve Net Zero GHG emissions from its operations by 2030, through the following methods:

1. Maximising use of renewable energy sourcing;
2. Reducing the size of our properties as more flexible office working is implemented;
3. Maximising 'digital-first' to optimise our travel needs;
4. Using high speed trains in place of short haul air travel where practical;
5. Using the most fuel-efficient aircraft for long haul travel;
6. Implementing energy efficiency improvements focusing on our high energy use sites; and
7. Making use of verified offsetting schemes to offset residual emissions

We will implement independently verified science-based targets during FY 2020/21.

### Possible trends in energy usage

It should be expected that FY 2020/21 data in some measures will be above FY 2019/20 values due to low operational and travel activity caused by COVID-19. The most significant positive impact will result from the full-year effect of the sale of the Detroit Technology Campus ('DTC') test facilities, which will significantly reduce US electricity and test fuel use and therefore increase the proportion of renewable electricity consumed. Some of the countries in which we operate have no energy market, and it is therefore not possible to buy renewables in those locations.

We believe that our test business will evolve over the course of the Net Zero journey period to use less conventional fossil fuel due a combination of electrification and an increased use of biofuel and e-fuels. This is a natural consequence of the decarbonisation of transport in the marketplace.

### Environmental management

As a responsible employer, we seek to protect and care for our employees by providing a safe and healthy work environment and by minimising the environmental impact of our operations.

Many of Ricardo's customers require certification for their key

suppliers in respect of the environmental management system standard, ISO 14001. Our certification directly covers 35 sites and 95% of our employees. The remaining employees and sites are managed via the ISO 14001 processes. The achievement of the standard is defined by appropriate policies, processes and procedures as part of the management system in each division. Many of these are closely linked to both quality and health and safety procedures.

Other environmental impacts arise from waste streams, which are monitored to identify potential improvement opportunities and to ensure legislative compliance. Higher-risk areas of our facilities, such as fuel storage and distribution systems, have containment and inspection regimes that meet local legislative requirements.

The suite of ISO certifications and the supporting internal and external audit programmes are used to check policy effectiveness, to share best practice, identify improvement opportunities and ensure compliance. Staff training in health and safety and environmental matters is a priority and is reviewed annually as part of normal appraisal processes. We have not had any enforcement action, fines or penalties this year.

### Human rights

The Group firmly believes in the principles behind the Universal Declaration of Human Rights. We support this by having a strong commitment to compliance with laws and regulations in the regions in which we operate, and by expecting the same from our suppliers. In January 2020 we published our Human Rights Policy, enhancing and clearly stating our commitments in the public domain. We specifically include statements on children's rights and child labour. We have no known incident of human rights policy breaches during the year.

In our Human Resources Policy, we protect freedom of expression, freedom of association and freedom from harassment, bullying and discrimination. We promote diversity and clear lines of responsibility, and we are a Living Wage Employer. We focus on our employees taking ownership of their work-life balance to provide a flexible working environment. In South Africa we have very few employees and we do not need to comply with B-BBEE legislation<sup>1</sup>. We have no known incident of labour standards breaches during the year.

### Health and safety

Ricardo is committed to compliance with local health and safety legislation, to a safe working environment and to a minimal level of reportable accidents. We support training in health and safety internal audits and inspections, and we are now certified to ISO 45001 in our technical centres and larger offices in the US, the UK, the Netherlands, Italy, the Czech Republic and China. Our certification directly covers 35 sites and 95% of our employees. The remaining employees and sites are managed via the ISO 45001 processes. Our Health and Safety Policy is available through our intranet and to the public through our website. Risk assessment is an integral part of our processes, both on a project

<sup>1</sup> See Glossary on page 201





Ricardo's Dipak Mistry volunteers with the See Kenya eyesight charity, which works to reduce blindness and provide specialist eyesight care in Kenya

basis for specific hazard management and more generally in the way manage risk on our sites and in travel.

Our health and safety, HR and site management teams and occupational health providers have played a key part in our COVID-19 response. They have been actively supporting employees with concerns, delivering safe work environments and ensuring the business can operate with rapidly changing regulations across our sites around the world.

We recognise the level of reportable accidents as a measure of performance in health and safety. The number of reportable accidents decreased in this financial year. The overall level is still low and shows the continued success of our health and safety policies. We continue to focus on reducing accidents and near-misses as part of our commitment to continuous improvement and loss prevention. All accidents and non-injury incidents are investigated and reported to divisional managements and employee consultation forums.

### Reportable accidents\*



(\* ) Based on current definitions of the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations ('RIDDOR')

### Sustainable procurement

We published our Procurement Policy in January 2020 as part of a range of commitments to our stakeholders.

Relations with our suppliers are essential in achieving client and shareholder satisfaction. Our policy is that key suppliers should be certified to ISO 9001, ISO 14001 and ISO 45001 standards, and all suppliers are encouraged to obtain these

certifications There are no significant supply contracts which are essential to the business of the whole Group, and we are not reliant upon any suppliers that would jeopardise the independence of the business.

Initiatives are managed by our Head of Global Procurement and savings are delivered by consolidating the supply base and reducing the total cost of doing business.

### Investing in our communities

It is our policy and objective to make a positive contribution to all regions and communities in which we operate. Many of the larger Ricardo offices support local community activity and give charitable donations, especially where employees participate in community or charitable fundraising activities. The focus is on creating sustainable links to the community, and on improving the image and understanding of the business, and the engineering and scientific professions, in the community. Our policy is published here: Engaging and supporting local communities ([www.ricardo.com/policies/engaging-and-supporting-local-communities](http://www.ricardo.com/policies/engaging-and-supporting-local-communities)).

Community engagement in promoting Science, Technology, Engineering and Maths ('STEM') subjects and diversity has been a key part of our employee involvement. We responded to the COVID-19 crisis by focusing on 'digital-first' for our engagement and look forward to resuming normal activities as social distancing rules are relaxed.

A wide range of activities have been undertaken, namely:

- Partnerships with schools near our larger sites , supporting curriculum delivery and teacher engagement in STEM;
- The automatic enrolment of many of our UK graduates as STEM ambassadors when they join the business;
- Working with universities and colleges to give opportunities for work experience and internships;
- Support for university teaching from Ricardo Software with its products; and
- Support for employees and their families who were not in school during the COVID-19 pandemic, for whom we set up a range of "STEMCasts" on a wide range of topics delivered by employees across the Group. Each event had an activity and offered prizes for the best solution to a challenge. Subjects included "how planes fly"; "cloud in a jar" and "steam engines".

We also work with our local communities to provide business input on economic regeneration, and we actively engage in local partnerships, particularly in the area where our Shoreham Technical Centre is located, where we are the largest private-sector employer.

### Donations

We often match staff donations to charitable activities, particularly where there is active staff participation in events. Financial contributions to charities in the financial year were £17,484 (FY 2018/19: £43,710). The external cost of the COVID-19 face shield project was £1,505: this is charitable in its nature. The effectiveness of these policies is informally measured by community feedback.

## COVID-19

As part of the international effort to supply Personal Protective Equipment ('PPE') required by those working to combat the COVID-19 pandemic, our purpose-designed protective face shields were used by front line healthcare workers in Michigan, US and across the Midlands and the south of England.

Around the middle of March when the COVID-19 pandemic began to escalate, we all felt that we could be applying our engineering, design or manufacturing capability to help alleviate some of the biggest technical or product challenges which were emerging. The need for PPE for frontline healthcare workers was clearly urgent.

From concept of the face shields to assembly took just three weeks, leveraging our experience in engineering design in Prague and the UK, high value rapid response assembly, and supply chain management. In that three-week period our team, which was headed by Programme Lead Phil Mortimer, created a bespoke design for the face shields, working with local NHS doctors to test the PPE for enhanced comfort and wearability over extended periods. Secondly, Performance Products' Head of Procurement Ian Morris and our procurement teams sourced a manufacturer in longstanding supply chain partner Stephens Plastic Mouldings, using tooling co-funded jointly with us. Thirdly, the team worked with the industry-leading test provider SATRA to secure fast-tracked testing of its protective face shield to EN166 – crucially, testing that enabled the PPE to be NHS approved for COVID-19 emergency use.

To ensure that the face shields could reach care home and NHS workers as quickly as possible, facilities were repurposed at the Shoreham and Midlands Technical Centres as assembly lines and logistics centres.

This effort was matched in the US where Ricardo North America project engineer Patrick Jones also put his skills, and 3D printer, to good use by helping with the creation of PPE

face shields, partnering with Operation Face Shield Ann Arbor to create face shields. Ricardo North America leaders were so proud of his work, they pledged to provide printing materials and financing.

The results of these activities were that in the US an additional 5,000 masks were created for Michigan residents, while in the UK 10,000 protective face shields which we designed, tooled and assembled were delivered to front line NHS and healthcare workers in just over 100 NHS hospital trusts, care homes, nursing homes, GP surgeries and hospices across the Midlands and south of England.







As part of the national effort to supply Personal Protective Equipment ('PPE') required by those working to combat the COVID-19 pandemic, Ricardo's purpose-designed protective face shields were delivered to front line healthcare workers in care homes and NHS sites across the Midlands and the south of England



# Risk management and internal control

The Board has overall accountability for ensuring that risk is effectively managed across the Group. We consider that effective risk management is critical to the achievement of Ricardo's strategic objectives and the long-term sustainable growth of our business. Such systems are designed to manage, rather than eliminate, the risk of failure to achieve Ricardo's objectives and can only provide reasonable assurance against material misstatement or loss.

Risks are reviewed by all business areas on a half-yearly basis and measured against a defined set of likelihood and impact criteria. Risks are measured both before and after the mitigating effect of the application of compensating controls. This is captured and reported consistently, enabling the risk information to be consolidated and ranked. The key risks are then summarised in the Group's risk profile and submitted to the Board for review and approval.

As part of the bi-annual risk management process, Directors and senior managers are required to certify that they have established effective controls to manage risk and to comply with legislation, as well as with the Group's policies and procedures.

Ricardo's internal control and monitoring procedures include:

- Clear and understood responsibilities by both line and financial management for the maintenance of good financial controls and the production of accurate and timely management information;
- Requirement for divisional Finance Directors to confirm on a monthly basis that appropriate controls are in place and to identify any exceptions, with the outcome being reviewed by the Group Financial Controller and Group Risk Manager & Head of Internal Audit;
- Divisional Finance Directors have line-management responsibility to their Managing Directors, but with an independent reporting line to the Chief Financial Officer;
- Control of key financial risks through clearly set authorisation levels and appropriate segregation of accounting duties;
- Control of key project risks through project delivery and review systems;
- Control of other key business risks through a number of processes and activities recorded in the Group's risk register;
- Detailed monthly forecasting and reporting of trading results, financial position and cash flow, with regular review by management of variances from budget and forecast;
- Review and reporting by the internal audit function on divisional compliance with internal procedures and financial controls; and
- Review and implementation of recommendations in reports on internal control by external auditors.

To ensure our risk process drives continuous improvement across the business, we monitor the ongoing status and progress of key action plans against each risk on a half-yearly basis. Risk is a key consideration in all strategic decisions made at Board level. In the June 2020 risk review cycle, we considered risks associated with our customers, suppliers, employees, finances and climate change, the potential impact of Brexit and

COVID-19; we now report the latter as an additional principal risk. Progress on managing the impacts of COVID-19 was reported to the Board on a weekly basis from end January 2020. Our principal risks and the approach to their mitigation are discussed on pages 37 to 39.

The Group has risk management processes in place for projects and other business risks. Contract risks are managed through a project management process which is closely linked to measurement of financial performance. The majority of active projects are reviewed on a monthly basis within divisions. In addition, the highest risk-category projects are independently reviewed by the Group either on a quarterly basis or once significant milestones are deemed to have been achieved. Non-contract risks are owned by the Group functions and divisional Managing Directors. These non-contract risks are analysed, regularly reviewed and recorded in the Group's risk register in liaison with the Group Risk Manager & Head of Internal Audit, who has an independent reporting line to the Chair of the Audit Committee. The Group's approach to risk management is to identify key risks early and to remove, control or minimise the impact of them before they occur.

Risk transfer is managed through insurances by the Group Risk Manager under the direction of the Chief Financial Officer. The insurance programme is reviewed annually by the Board to ensure that it continues to meet business needs as the risk profile changes.

Risk appetite is managed through a number of internal controls, authority limits and insurance excesses. The Group's risk appetite was reviewed during the year as part of the Board's review of risks and is stated as an internal policy document.

The Group's internal audit function provides assurances on divisional systems of internal control, risk management and compliance with applicable legislation and regulations. This is complemented by internal audits required as part of maintaining certifications to international standards for management systems. The effectiveness of these risk management and internal audit processes is reviewed annually by the Audit Committee and is set out on pages 98 to 101.

Financial risks faced by the Group comprise capital risk, liquidity risk, credit risk and market risk (comprising interest rate risk and foreign exchange risk). The Group's objectives, policies and strategies in respect of these risks are set out in Note 27 to the Group financial statements.

The Company complies with the 2018 UK Corporate Governance Code by ensuring that:

- Risks are either classified as strategic or operational and as either internally or externally driven;
- Risks are evaluated on a gross and net risk basis; and
- The Chief Executive Officer reviews the higher-rated risks on the Group's risk register with the Audit Committee twice each year, in the presence of the other Executive Directors and the Chair.

We also ensure that emergent risks are considered as part of the Board's existing half-yearly reviews of risk and annual review of strategy.

# Principal risks and uncertainties

In common with all businesses, the Group faces risks and uncertainties on an ongoing basis. It is the effective management of these risks that places us in a strong position to be able to achieve our strategic objectives and to embrace opportunities as they arise.

The following table details the Group's principal risks, the mitigating activities in place to address them, and the additional actions implemented to further reduce the net risk to the Group. The mitigation of the principal risks is within the Group's risk

appetite, which is reviewed annually by the Audit Committee. It is also recognised that the Group is exposed to a number of emergent risks that are currently deemed to be less material, together with additional risks and uncertainties beyond those listed that are presently not known to management and which may also have an adverse effect on the business.

**Movement in risk**    ↓ Reduced risk    — No change    ↑ Increased risk

Principal risk	Impact	Mitigation
<p><b>Customers and markets</b></p> <p>The Group operates in a dynamic, diverse and politically volatile marketplace, which is exposed to many legislative and economic pressures. These include pressures to improve urban air quality, reduce greenhouse gas emissions, provide independent emissions testing and to navigate the impact of Brexit and global trade tensions.</p> <p style="text-align: right;">—</p>	<p>Changes in the market could cause changes or uncertainty in the product plans of major customers or government policy, leading to delays in the placement of new orders or insourcing of activity, the redirection, deferral or curtailment of existing contracts, slippage in payments or variations in demand for resources and availability of project funding. Unpredictability in the timing of the receipt of orders and the utilisation of our resources to generate revenue and profit may give some volatility in our ability to forecast future performance. COVID-19 is an example of one of many factors.</p>	<p>These risks are mitigated by the strategy of diversifying the Group to reduce exposure to any one specific customer, territory or segment. Challenges currently being faced by our automotive businesses across the globe can be mitigated by other segments. The success of this strategy is measured by the key performance indicators for customer dependency and segment diversity shown on page 14 and by the geographic spread of revenue, as disclosed in Note 6 to the Group financial statements.</p> <p>In the event of a sudden downturn in a segment or the wider economy, contingency plans are quickly deployed to minimise the impact on short-term performance and to preserve cash whilst protecting the long-term needs of the Group's stakeholders. The impact of insolvency risk is mitigated by robust working capital management and the use of credit insurance where this is economically available.</p>
<p><b>COVID-19 (Pandemic disease)</b></p> <p>The Group operates in many countries and is subject to their public health controls including the control of diseases that can be classified as pandemics. The consequences of this can be significant disruption to our people and their health, to our operations, ability to travel and those of clients and suppliers.</p> <p style="text-align: right;">↑</p>	<p>COVID-19 has been the first pandemic to impact the business. The effects have included: lockdowns for many weeks in most territories where clients, suppliers and Ricardo operate; working from home or limited staff activity; delays in supplies; client force-majeure notices; significant limitations on commuting and business travel; increased sickness; new and rapidly changing government requirements and so forth. All these slowed revenue generation and, in some cases, orders and payments.</p>	<p>This risk was mitigated by a series of actions managed via our Crisis Management plan which was activated in early February using some mitigations from our pandemic disease planning and some from our customers and markets risks. We quickly set up a command structure support by a team of senior Group staff reporting to the CEO. When lockdown in Europe was inevitable, we increased our remote IT capability without reduction in IT security controls and transitioned about 2,000 employees to home-based working in less than a week, with minimal disruption. We made limited use of appropriate government schemes to support businesses.</p> <p>As we move to a "new normal" which is likely to last until the pandemic is under control, we have evolved our operating model to be less dependent on fixed office locations. We have become more agile in the way our office-based staff work and will need less space in some locations over time, employing an employee-focused "Healthy People, Healthy Business" approach. Our client and supplier facing teams have successfully adopted 'digital-first' as we sell and deliver. We have reduced our cost based to make the business more resilient.</p>
<p><b>Brexit</b></p> <p>Brexit is a source of political, regulatory and economic instability, which could have a significant impact on the Group for an uncertain period of time. The Group has assessed the risk and taken appropriate action, and continues to monitor the situation in readiness to change and implement further plans as more information becomes available.</p> <p style="text-align: right;">—</p>	<p>The main areas of potential impact are these: trade tariffs, exchange rates and supply-chain disruption within Performance Products, the need for additional certifications in the EU for Rail, the ability to recruit staff, the mobility of people to work within the EU and the UK, and the ability to contract with customers between the EU and the UK.</p>	<p>In Performance Products we have ensured all documentation is in place to continue to export to key clients in the EU. We have considered the potential impact of tariffs, exchange rate movements and logistics disruption on our EU supply chains. Arrangements are in place to increase inventory levels.</p> <p>Our Rail Notified Body ("NoBo") accreditation in the UK is no longer valid in the EU after Brexit, so we have obtained NoBo status from the Danish and Dutch certification authorities so that we can maintain access to the EU market.</p> <p>To reduce the risk of loss of contracts with the European Commission, we added capability in the Netherlands to contract with the European Commission and provide them with ongoing support.</p> <p>We are monitoring the potential impact of the implications of ongoing trade negotiations on employee mobility and our ability to recruit EU nationals for UK roles and vice versa. We believe that our range of geographic locations across Europe will continue to make us an employer of choice.</p>

Principal risk	Impact	Mitigation
<p><b>Contracts</b></p> <p>Group's revenue arises from fixed-price contracts for engineering, technical, environmental and strategic consultancy services, together with accreditation and independent assurance services, with an increasingly broad range of projects, customers and geographies. There is a risk that the obligation to complete the agreed scope of these contracts may be carried out over a longer timescale or in a less cost-efficient manner than initially estimated, reducing profit margins.</p> <p>In product supply contracts, there is a risk of product liability, recall or warranty claims and dependency on specialist suppliers.</p> <p>Contracts denominated in foreign currencies can be subject to exchange rate risk.</p> <p style="text-align: right;">-</p>	<p>Failure to perform on contracts within estimated cost and delivery timescales could impact profitability. Faulty products, or the infringement of the rights of others, could potentially subject the business to increased costs, a claim from a customer, reputational damage or reduced opportunity for repeat business. Failure of production processes or product validation could lead to warranty or recall claims. Failure or poor performance of a supplier could disrupt delivery to customers and increase operating costs. Unhedged adverse foreign exchange rate movements on contracts could also affect profitability.</p>	<p>Project leadership and management are the Group's core competencies. Led by the Group Engineering and Programmes Director, the Group remains focused on the continuous improvement of these functions.</p> <p>Risks are proactively managed by clearly defined lead qualification, bidding, contracting and project management processes, whereby projects are initially categorised according to their risk level and their performance is continually assessed throughout the life of the project, which in turn dictates the level of approval or review required. Internal procedures are in place to ensure that the technical content of our output is of high quality and meets customer requirements without infringing the rights of others, and within time and cost estimates.</p> <p>Procurement processes are in place to assess critical suppliers and selections are often made with the involvement of the customer. In product supply contracts, there are rigorous quality assurance processes in place to reduce the risk of product liability, warranty and recall claims.</p> <p>Significant contracts in foreign currencies are hedged to protect against volatility in exchange rates.</p>
<p><b>People</b></p> <p>Ricardo is a diverse business that is knowledge-driven and people-led, with a focus on attracting and retaining the best talent. Recruiting, developing and retaining knowledge and talent in the right locations is essential.</p> <p style="text-align: right;">-</p>	<p>The failure to recruit, develop or retain the very best talent would restrict growth and the execution of our strategy, and would have an impact on delivery and customer relationships.</p>	<p>The Group is focused on a model of 'bringing in and bringing on' the best talent. We aim to ensure that we actively develop and manage staff to encourage their optimum contribution; we foster mobility and professional development, and we provide appropriate remuneration and working conditions. Our IT infrastructure enables us to share work and mitigates mobility issues. Our people as stakeholders are discussed further on pages 22 to 25.</p>
<p><b>Technology</b></p> <p>The business is enabled through the development of new technology to meet the needs of market sectors, customers, and regulators on varying time scales.</p> <p style="text-align: right;">-</p>	<p>If the Group invests in technologies that later prove to be unsuitable, it could lose marketplace advantage and revenue could reduce. If there are disruptions in the implementation of new regulations, which in turn accelerate or delay customer programmes dependent on new technology, the time taken to deliver returns from our R&amp;D programmes may also increase.</p>	<p>Our R&amp;D programmes are developed through a mixture of customer consultation, long-range forecasting, thought leadership and deep technology roadmap development. Many of our programmes are collaboratively developed and delivered with customers, partners, governments and suppliers, which creates strong links to the market and ensures the output is relevant and credible.</p> <p>The programmes are approved and delivered within the divisions, with a small number of programmes managed at a Group level through a disruptive innovations team. Staff and facilities are shared across multiple geographies to deliver innovative solutions and services to the market and capitalise on our internally developed intellectual property and know-how. Further details of a selection of our current R&amp;D programmes are given on pages 18 to 20.</p>



Principal risk	Impact	Mitigation
<p><b>Laws and regulations</b></p> <p>The Group's operations are subject to an increasingly wide range of evolving domestic and international laws and regulations, including restrictions, standards and tax legislation.</p> <p style="text-align: right;">-</p>	<p>Failure to comply with, or failure to adapt to changes in, laws and regulations including restrictions, standards and tax legislation could expose the Group to increased compliance costs, fines, penalties or reputational damage, or result in trading restrictions which could have a materially adverse impact on the business or impede the Group's ability to recover certain available tax-related credits.</p>	<p>To mitigate these risks, the Group has a number of defined policies and operating procedures in place, and takes professional advice, where considered necessary, to ensure that the Group acts upon current and anticipated changes in legislation. Our Code of Conduct, which is published on <a href="http://www.ricardo.com">www.ricardo.com</a>, ensures that employees and others act with the highest ethical standards and within local legal and regulatory requirements.</p> <p>In January 2020 we refreshed several policies and published them on <a href="http://www.ricardo.com">www.ricardo.com</a> to provide greater transparency to our commitments to many areas of the ESG agenda.</p> <p>The Group's internal audit programme includes within its remit the review of compliance with applicable legislation and regulations, and awareness of key Group policies and procedures. These are updated as regulations change and as a result of our continuous drive to adopt best practice. We aim to anticipate the impact of working in new countries and new sectors, particularly within our Rail business, which operates in a growing list of territories and cultures, each with its own regulations, standards and laws with which we need to comply.</p> <p>Unsettled tax credits claimed within a financial year are recognised to an appropriate level at which management is highly confident of full recovery, and in a manner that is consistent with both current legislation and professional advice.</p>
<p><b>Defined benefit pension scheme</b></p> <p>The Group has a UK defined benefit pension scheme which currently has a funding deficit. The economic uncertainty caused by both COVID-19 and Brexit has increased the volatility in the assets and liabilities of the scheme.</p> <p style="text-align: right;">↑</p>	<p>Any decline in the value of the pension fund assets, increase in life expectancy, long periods of high inflation or decreases in interest rates would increase the funding deficit and require additional funding contributions in excess of those currently expected.</p>	<p>The Group closed the pension fund to future accrual in 2010. The current funding plan was agreed on the basis of a valuation undertaken as at 5 April 2017 and anticipates deficit recovery contributions being made until July 2022. In addition, the Group regularly monitors the performance of the pension fund.</p> <p>Further details of the Group's defined benefit pension scheme can be found in Note 33 to the Group financial statements.</p>
<p><b>Financing</b></p> <p>The Group is in a net debt position, having drawn on available facilities primarily to fund acquisitions and for general corporate purposes.</p> <p style="text-align: right;">-</p>	<p>There is a risk of the Group being unable to secure sufficient financing at reasonable cost in order to carry out its strategic objectives.</p>	<p>This risk is mitigated by robust cash and working capital management, regular process improvement initiatives, monitoring actual cash flows to budgets and forecasts, maintaining good relationships with the Group's bankers and ensuring that sufficient borrowing facilities are in place at all times to support the Group's funding requirements to deliver on its growth strategy, with additional headroom available to meet possible downside scenarios.</p> <p>As at 30 June 2020, the Group has sufficient headroom in its facilities and covenants. During September 2020 the covenants for the December 2020 and June 2021 tests were amended, providing further headroom. The Group increased its borrowing facilities in May 2020, raising the committed facility to protect against downside scenarios and support the Group's growth strategy to 2023.</p> <p>Further details of the Group's borrowing facilities and other financial risks can be found in Note 25 and Note 27 to the Group financial statements, respectively.</p>
<p><b>Information security</b></p> <p>Ricardo has valuable intellectual assets comprised of propriety, customer, and supplier data.</p> <p style="text-align: right;">-</p>	<p>The theft or loss of intellectual assets could result in reputational damage, loss of competitive advantage, business disruption and financial penalties.</p>	<p>Ricardo has implemented a global Information Security Management System ('ISMS') and achieved certification to ISO 27001 "Information Security Management" at our main facilities.</p> <p>The Group IT Director is accountable for managing information security resilience, which includes cyber risk. Dedicated information security resources monitor and manage our threat profile. External penetration tests are conducted to augment our control regime.</p> <p>Information security risks are reviewed by the Group IT Director each quarter and integrated with the Group's enterprise risk management process. Bi-annual briefings on information security are made to the Audit Committee.</p>

# Viability statement

The Directors have assessed the prospects of the Group in accordance with provision 31 of the 2018 UK Corporate Governance Code.

## The context supporting the assessment

The Group's prospects are underpinned by its business model and strategy, which can be found on pages 4 to 5. The Group continues to follow a balanced approach to its strategy, which is subject to ongoing monitoring and development as described herein. The underlying operating profit of the Group has grown on average by 7% each year over the last five years. However, COVID-19 has negatively impacted operating profit in the current year, with underlying operating profit reducing from £39.6m in FY 2018/19 to £20.0m in FY 2019/20. The reported operating loss was £0.9m in FY 2019/20. The Group has a year-end order book of £314.0m, of which 35% is expected to be workable beyond 12 months from the year-end. The year-end order book comprises the value of all unworked purchase orders and contracts received from customers.

The strategy of the Group is to develop and deliver innovative, cross-sector sustainable, efficient and secure energy, environmental and mobility solutions and products. The Group's businesses focus on the development of longer-term, multi-year contracts and relationships, underpinned by global macro trends. The Board has considered the risk appetite and profile of the Group in this context and has determined that this remains appropriate for the Group as a whole.

## Assessing the prospects of the Group

The Group's prospects are assessed primarily through its annual strategy review and business planning processes, which cover a five-year period and a three-year period, respectively, and are both led by the Chief Executive Officer.

The strategy review is a forward-looking process and is undertaken by the Group's constituent divisions, with full participation by members of the Board, which results in a five-year strategic plan. Part of the Board's role is to review the performance of the Group in the last financial year and to consider whether the strategic plan remains appropriate. This includes an assessment of changes in the market and competitive environment, together with macroeconomic, political, societal and technological changes. Actions are implemented as necessary to continue to support the strategic plan.

Detailed business plans are also prepared during the last quarter of each financial year by all the Group's constituent divisions, with the involvement of relevant functions including Finance and Treasury; these plans are then reviewed and approved by the Board. The first year of the business plan forms the Group's annual operating budget. This is subject to a re-forecast on a monthly basis. The second and third years are based on the overall content of the year-one business plan together with the strategic plan, having been flexed for known or anticipated events.

## Assessment of viability

The three-year business plan reflects the best estimate of the prospects of the Group. This has been stress-tested to consider the impact of the COVID-19 outbreak on the Group's results, operations and financial position in a range of scenarios, including a severe but plausible downside scenario, with more detailed cash flow forecasts prepared which cover the period to June 2022. The scenario includes:

- Group revenue continuing at H2 FY 2019/20 COVID-19 impacted run-rates for the whole of FY 2020/21. Relative to FY 2019/20, the scenario assumes a 15% reduction in annual A&I revenue and a 20% reduction in annual Performance Products revenue. In addition, specific sensitivities have also been included to model the potential impact of slippage in contracts and lower volumes in segments including Defense, Rail, and RSC & Software. Given the current market and pipeline of opportunities, no sensitivities have been applied to Energy & Environment. FY 2021/22 Group revenue is projected to increase by 9% on the sensitised FY 2020/21 levels, broadly in line with FY 2019/20 revenue, largely driven by increased volumes in Defense and Performance Products; and
- An increase in the Group's working capital days of ten, to model the potential impact of a continuation of the slow-down in project delivery, combined with delayed receipts from customers.

This scenario incorporates appropriate mitigating actions and cost saving measures which are within the Group's control. The impact of this scenario on the Group's business plan has been quantified and presented to the Board as part of the approval process. The scenario, which is based on aspects of the Group's principal risks and uncertainties, including customers and markets, COVID-19, contracts, and financing, as set out on pages 37 to 39, represents severe but plausible circumstances that the Group could experience.

The results of our stress-testing showed that the Group would be able to withstand the impact of the scenario occurring over the period of the plan, by making adjustments to its operating activities within the normal course of business. The severe but plausible downside scenario does not present a significant threat to Group's liquidity. Although headroom under the Group's banking covenants is reduced under the scenario, no banking covenants are breached.

The Group also performed reverse stress-testing on its financial plan using these scenarios to identify the point at which its banking covenants would be breached. In the event of such scenarios materialising, more severe cost actions would be taken to ensure covenant compliance.

## Viability statement

The Directors have assessed the prospects of the Group over the three-year period to 30 June 2023 and confirm that their assessment of the principal risks and uncertainties facing the Group was robust. A three-year period was selected for the following reasons:

- This period reflects the detailed business planning cycle;
- Lead times on customer contracts and typical engineering programmes are no longer than three years; and
- Although the strategic plan covers a five-year period, the Group's order book and pipeline of opportunities does not extend significantly beyond three years.

Whilst the Directors have no reason to believe the Group will not be viable beyond the three-year period of this

assessment, a three-year period is deemed most appropriate given the inherent uncertainty involved and the stress-testing scenarios considered as part of the three-year business plan, together with the reasons outlined herein.

Based on their assessment of prospects and viability, 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 ending 30 June 2023.

## Going concern

Given the viability statement provided above, the Directors therefore considered it appropriate to prepare the financial statements on a going concern basis, as explained in Note 1(a) to the Group financial statements.

The Ricardo ConnectHEV demonstrator vehicle showcases connected technologies which are helping to accelerate the adoption of electric and hybrid vehicles





# Financial review



**Ian Gibson**  
Chief Financial Officer

“The Group delivered revenue of £352.0m and underlying profit before tax of £15.6m in the year, a reduction of 8% and 58% on the prior year, respectively. The Group made a reported loss before tax of £5.3m. The results reflect a backdrop of automotive market challenges and, in the second half of the year, COVID-19, which had a significant adverse impact on the Group. The closing order book was in line with the prior year at £314.0m.

The Group has taken positive steps to restructure and create a more agile and asset-light business, including the sale of our test facilities in Detroit in June 2020. Our cash performance has been good, particularly in the second half of the year, where net debt was flat, driven by a continued focus on working capital. In May 2020, we negotiated an amendment to our banking facilities, thereby increasing liquidity and near-term funding, with an additional amendment agreed in September 2020, providing further headroom.”

## Group results

The Group’s headline financial results are presented on page 6. Compared to the prior year, the Group’s performance reflects market challenges in our automotive-related businesses and the COVID-19 outbreak, which had a negative impact on trading in the second half of the year.

Energy & Environment (‘EE’) and Defense delivered increases in profits in the year. Both benefited from buoyant markets and a largely public-sector customer base, which helped to maintain performance during the COVID-19 crisis. Our Defense operations are deemed essential by the US Government. The Australian acquisition in EE performed in line with plan.

Rail delivered an increase in profits, driven by the performance of its recent acquisition in Australia, which has performed strongly since its acquisition. This was offset by challenges in the UK and Asia, with reduced volumes and delays to major projects. Restructuring actions were completed during the year to realign the business to match demand.

Our automotive-related businesses were impacted by continuing challenging market conditions and the COVID-19 crisis. COVID-19 resulted in a slow-down in project delivery, due to customers either closing down their operations or working remotely due to various lockdown restrictions. This first impacted our China operations in late January 2020, before spreading to the US and Europe in March 2020. Action has been taken to address

these challenges through the restructuring of our automotive-related activities including the disposal of test facilities and reductions in the cost base, creating a more agile business, as set out in the comments on specific adjusting items below.

Performance Products (‘PP’) delivered a lower volume of high-performance engines and transmissions than the prior year due to the closure of some of our customers’ production lines as a result of COVID-19 in the final quarter of the financial year. Our customers have since returned to production.

The segmental results are discussed in more detail on pages 47 to 59.

## Order intake down 4% on FY 2018/19 with closing order book at £314.0m.

The Group’s overall order intake reduced by 4% to £368.7m in the year, reflecting the challenging trading conditions, with delays in orders being placed during the COVID-19 pandemic. Order intake averaged £27m per month in the second half of the year, compared to £35m in the first half. The closing order book was £314.0m (FY 2018/19: £314.0m), demonstrating that the Group continues to win work during these challenging conditions. Order intake includes £16.3m in respect of Transport Engineering (renamed Ricardo Rail Australia, or ‘RRA’) and PLC Consulting (renamed Ricardo Energy, Environment and Planning, or ‘REEP’) which were acquired on 31 May 2019 and 31 July 2019, respectively.

## Headline trading performance

	Underlying <sup>(1)</sup>			Reported	
	Revenue	Operating profit	Profit before tax	Operating loss/(profit)	(Loss)/profit before tax
<b>FY 2019/20 (£m)</b>	<b>352.0</b>	<b>20.0</b>	<b>15.6</b>	<b>(0.9)</b>	<b>(5.3)</b>
FY 2018/19 (£m)	384.4	39.6	37.0	29.1	26.5
Add performance of acquisitions <sup>(2)</sup> (£m)	16.1	4.0	3.6	4.0	3.6
Organic FY 2018/19 <sup>(2)</sup> (£m)	400.5	43.6	40.6	33.1	30.1
<b>Decline (%)</b>	<b>(8)</b>	<b>(49)</b>	<b>(58)</b>	<b>(103)</b>	<b>(120)</b>
<b>Organic decline<sup>(3)</sup> (%)</b>	<b>(12)</b>	<b>(54)</b>	<b>(62)</b>	<b>(103)</b>	<b>(118)</b>
<b>Constant currency organic decline<sup>(4)</sup> (%)</b>	<b>(12)</b>	<b>(53)</b>	<b>(61)</b>	<b>(102)</b>	<b>(117)</b>

(1) Underlying measures exclude the impact on statutory measures of specific adjusting items as set out in Notes 3 and Note 7 to the Group financial statements. Underlying measures are considered to provide a more useful indication of underlying performance and trends over time.

(2) See Note 3 to the Group financial statements.

(3) Organic growth/decline is calculated as the decline in the result for the current year compared to the prior year, after adjusting for the performance of acquisitions or disposals, to include the results of those acquisitions for an equivalent period in each financial year (see Note 3 to the Group financial statements).

(4) The Group generates revenues and profits in various territories and currencies because of its international footprint. Those results are translated on consolidation at the foreign exchange rates prevailing at the time. Constant currency organic growth/decline is calculated by translating the result for the current year using foreign currency exchange rates applicable to the prior year. This provides an indication of the growth/decline of the business, excluding the impact of foreign exchange (see Note 3 to the Group financial statements).

### Revenue down 8% on FY 2018/19

Against what was a challenging market backdrop, reported Group revenue reduced by 8% to £352.0m (FY 2018/19: £384.4m). Revenue was 12% lower on an organic basis, after normalising the prior year result for the impact of RRA and REEP.

### Underlying operating profit down 49% on FY 2018/19, with a reported operating loss of £0.9m (FY 2018/19: profit of £29.1m)

Underlying operating profit, which excludes net finance costs and specific adjusting items, as set out in Note 7 to the Group financial statements, decreased by 49% to £20.0m (FY 2018/19: £39.6m). Underlying operating profit margin decreased to 5.7% (FY 2018/19: 10.3%), reflecting the lower order intake and inefficiencies from the slow-down in project delivery in the second half of the year.

EE, Defense and Rail delivered increased operating profit. Rail's result reflects a strong performance from RRA since its acquisition. Operating profit declined in the Automotive & Industrial ('A&I'), Performance Products and Strategic Consulting & Software segments. On an organic basis, underlying operating profit declined by 54%. The FY 2019/20 reported operating loss was £0.9m (FY 2018/19: £29.1m), with the reduction driven by an increase in specific adjusting items, as set out below.

### Underlying profit before tax down 58% on FY 2018/19, with a reported loss before tax of £5.3m (FY 2018/19: profit of £26.5m)

Underlying profit before tax decreased by 58% to £15.6m (FY 2018/19: £37.0m). On an organic underlying basis, profit before tax declined by 62%.

FY 2019/20 reported profit before tax includes £20.9m of costs relating to specific adjusting items (FY 2018/19: £10.5m). FY 2019/20 specific adjusting items include £11.9m (FY 2018/19: £3.4m) of reorganisation costs, which reflect actions taken to restructure the Group and right-size the cost base in the wake of the challenging market conditions and the economic downturn.

It also included the sale of our engine test business in Detroit in June 2020, for an initial cash consideration of £2.8m and loss on disposal of £2.1m. These are discussed in more detail below.

### Net debt up 55% to £73.4m

Closing net debt was £73.4m (FY 2018/19: £47.4m). The increase in net debt in the year (£26.0m), was driven by the purchase of the Detroit Technology Campus ('DTC') facility (comprising north and south buildings) in August 2019 for a consideration of £14.2m (see further details below), the purchase of REEP (£3.8m, net of cash acquired), £1.3m of other acquisition-related cash costs, and £1.5m of net restructuring cash costs (net of the £2.8m of initial cash consideration received in relation to the sale of the Detroit engine test business). The net cash inflow from working capital, excluding specific adjusting items, was £4.5m in the period, reflecting a strong focus on cash collections combined with lower levels of trading in the second half of the year. The composition of net debt is defined in Note 25 to the Group financial statements.

Details of the Group's banking facilities are set out on page 46.

### Basis of preparation

The financial statements have been prepared in accordance with International Financial Reporting Standards ('IFRS') and International Financial Reporting Standards Interpretations Committee ('IFRS IC') interpretations adopted by the European Union ('EU') and the Companies Act 2006 applicable to companies reporting under IFRS. The Group's principal accounting policies are detailed in Note 1 to the Group financial statements. Those accounting policies that have been identified as being particularly sensitive to complex or subjective judgements or estimates are disclosed in Note 1(c) to the Group financial statements.

## New accounting standards

The Group adopted IFRS 16 *Leases* as of 1 July 2019. The Group adopted the modified retrospective approach to transition. Under this approach, the Group has not restated comparative financial information, which remains presented under IAS 17. As set out in more detail in Note 2 to the Group financial statements, the transitional impact from the application of IFRS 16 was a reduction to opening reserves as at 1 July 2019 of £3.7m after tax. The impact of IFRS 16 on the Group's underlying operating profit was an increase of £0.9m and there was a £0.2m negative impact on the Group's underlying profit before tax for the year ended 30 June 2020. The impact of IFRS 16 on the Group's reported operating profit was an increase of £4.8m and there was a £3.7m increase in the Group's reported profit before tax for the year ended 30 June 2020.

## Acquisitions and acquired intangibles

As set out in more detail in Note 14 to the Group financial statements, the Group acquired the entire issued share capital of PLC Consulting Pty Ltd (renamed Ricardo Energy, Environment and Planning, or 'REEP') on 31 July 2019 for an initial cash consideration of £4.2m (AUD 7.4m), which included an adjustment of £0.3m (AUD 0.4m) for cash and normalised levels of net working capital, paid in November 2019. The maximum contingent cash consideration payable is £1.5m (AUD 2.6m), based on a combination of the achievement of certain performance targets over a two-year period and the continuing employment of sellers in the business. £0.7m (AUD 1.3m), representing an accrual for the fair value of the expected year-one earn-out payment, has been recognised in the income statement within specific adjusting items.

This investment added goodwill of £2.6m (AUD 4.6m) to the Ricardo EE cash-generating unit and acquired intangible assets of £1.3m (AUD 2.4m), which have a net book value at year-end of £0.9m (AUD 1.7m). Amortisation of £0.4m (AUD 0.7m) has been charged to the income statement as a specific adjusting item in the period since acquisition, together with £0.2m (AUD 0.4m) of expenditure incurred in relation to the post-deal integration of the business.

In the prior year, the Group acquired the entire share capital of Transport Engineering Pty Ltd (renamed Ricardo Rail Australia, or 'RRA') for an initial cash consideration of £21.7m (AUD 39.5m), including an adjustment for cash and normalised net working capital of £0.5m (AUD 0.9m), which was paid in August 2019, together with the accrued provisional fair value of contingent cash consideration payable of £5.1m (AUD 9.4m).

The maximum contingent cash consideration payable is £8.1m (AUD 15.0m), based on the achievement of annual performance targets across a two-year earn-out period. £2.1m (AUD 3.8m) has been accrued within specific adjusting items (see Note 7 to the Group financial statements) in the current year, reflecting the increase in the fair value of contingent consideration payable based on RRA's results for the year to 30 June 2020.

Amortisation of £1.9m (AUD 3.6m) on acquired intangibles has been charged to the income statement as a specific adjusting item in the financial year, together with £0.2m of expenditure incurred in relation to the post-deal integration of the business.

## Specific adjusting items

As set out in more detail in Note 3 and Note 7 to the Group financial statements, the Group's underlying profit before tax for the year excludes costs incurred during the year that have been charged to the income statement as specific adjusting items of £20.9m (FY 2018/19: £10.5m).

## Reconciliation of underlying profit before tax to reported (loss)/profit before tax

£m	FY 2019/20	FY 2018/19
<b>Underlying profit before tax</b>	<b>15.6</b>	<b>37.0</b>
Amortisation of acquired intangibles	(6.0)	(4.0)
Acquisition-related expenditure	(3.0)	(1.8)
A&I US - DTC purchase and impairment	(3.6)	-
A&I US - Test business loss on disposal	(2.1)	-
A&I US - exit of SCTC and other reorganisation costs	(0.9)	-
Other reorganisation costs	(5.3)	(3.4)
GMP equalisation	-	(1.3)
<b>Reported (loss)/profit before tax</b>	<b>(5.3)</b>	<b>26.5</b>

£6.0m of amortisation on acquired intangibles was charged in FY 2019/20. In addition to amortisation in respect of RRA and REEP, £3.7m was charged in respect of acquisitions made in prior years.

Acquisition-related expenditure of £3.0m was incurred in FY 2019/20 (FY 2018/19: £1.8m). FY 2019/20 costs include £2.8m of accrued earn-out payments for RRA and REEP. A total of £1.3m was recognised in respect of external transaction fees, acquisition and post-deal integration costs. In addition, a £1.1m gain was recognised from the settlement of a foreign exchange option contract, which was taken out to finance an aborted overseas acquisition. FY 2018/19 costs included £0.4m of accrued earn out costs and £1.4m of external deal fees and acquisition costs.

Reorganisation costs include £6.6m of costs in relation to the major restructuring of our US A&I business, in line with our strategy of realigning its cost base in order to make it a more operationally efficient business. These costs have been included as specific adjusting items since they are significant in quantum and would distort the underlying trading performance if included. In August 2019, we purchased the freehold property at DTC (comprising the north test buildings and south office building) for £14.2m (USD 17.3m), thereby removing the US A&I business from its long-term lease commitment on the property. We immediately marketed it for sale, together with our DTC test assets, which were held for sale at the end of the prior financial year, and recognised a £6.7m impairment charge to write down the value of the facility to its fair value. This was partially offset by the release of a £3.1m lease liability on its purchase.

In June 2020, we sold our test operations in DTC (test assets together with the DTC north building) for an initial cash consideration of £2.8m (USD 3.5m), which could increase to £4.4m (USD 5.5m) depending on the volume of testing work placed into the facility by Ricardo over the next two years. A loss of £2.1m was recognised on the sale. In addition, we also





Ricardo's VR-based vehicle styling review app was demonstrated to attendees of the Ricardo Motorcycle conference

exited the aftertreatment business at our Santa Clara Technical Centre ('SCTC'), incurring £0.4m of exit costs and the write-off of equipment. £0.5m of redundancy and incremental contractor costs were incurred in the year in connection with these actions. The DTC south building continues to be marketed and remains held for sale.

£4.0m of redundancy costs were incurred in FY 2019/20 across the Group's automotive-related businesses (A&I in Europe, Performance Products and RSC & Software, totalling £2.6m) and Rail (£1.4m). In our automotive-related businesses, these actions were taken as a result of major restructuring required to right-size the cost base in these businesses in response to the challenging trading conditions.

The Rail costs represent the completion of a restructuring process which commenced in the prior year to realign the business to market demand. As part of these restructuring actions, a charge of £0.6m was recognised in respect of the vacant portion of the Cambridge Technical Centre ('CaTC'). £0.4m of professional fees and £0.3m of incremental contractor costs were incurred in relation to the restructuring initiatives in FY 2019/20. The total costs of these restructuring actions have been included as specific adjusting items since, together, they are significant in quantum and would distort the underlying trading performance if included. In the prior year, £2.4m of redundancy costs were incurred in A&I Europe and Rail, together with £0.7m of costs in relation to onerous contracts and £0.3m of contractor costs. The FY 2018/19 A&I restructuring costs were not linked to the FY 2019/20 restructuring programme.

### Research and Development ('R&D') and capital investment

The Group continues to invest in R&D and spent £12.5m (FY 2018/19: £13.4m) before government grant income of £1.1m (FY 2018/19: £2.2m). Costs capitalised in the year were £8.0m (FY 2018/19: £7.6m), reflecting our continued investment in our Software segment, together with new technology, tools

and processes in our A&I and EE segments. During the year, we successfully completed the sale of the Group's CryoPower intellectual property to FPT Industrial S.p.A. An overview of current R&D activities is presented on pages 18 to 20.

Additions to property, plant and equipment, excluding right-of-use assets, were £22.0m (FY 2018/19: £7.6m). Excluding the DTC facility purchase, additions were £7.8m, reflecting continued investment in our business operations, including new and upgraded test-cell equipment, machinery and IT equipment.

The total Research and Development Expenditure Credit ('RDEC') recognised in the year was £7.7m (FY 2018/19: £7.1m). This comprised an estimated RDEC credit in respect of the current year of £6.7m (FY 2018/19: £6.9m), together with £1.0m (FY 2018/19: £0.2m) arising from the routine amendment of open applications as a result of further analysis of the qualifying expenditure incurred.

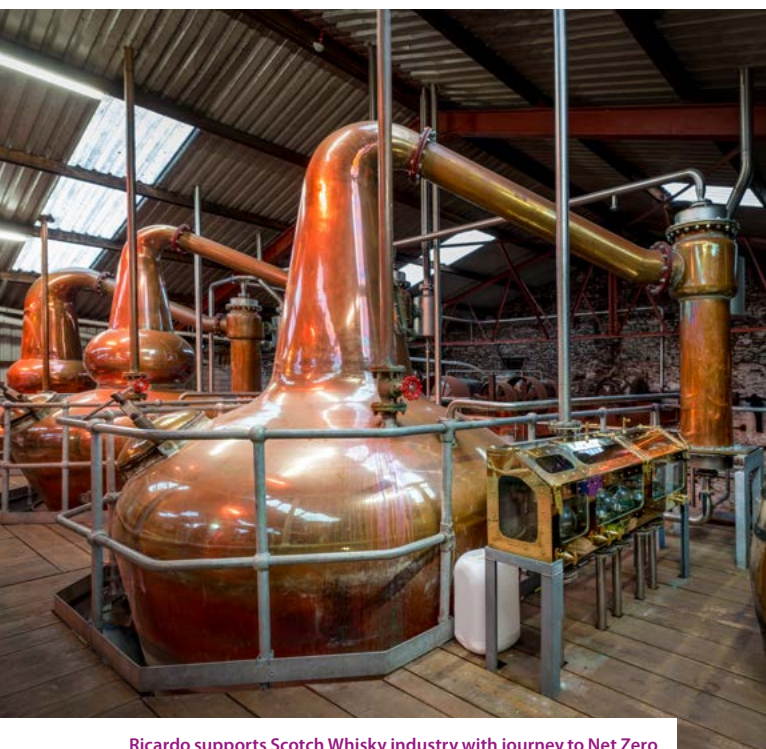
### Net finance costs

Finance income was £0.4m (FY 2018/19: £0.5m) and finance costs were £4.8m (FY 2018/19: £3.1m) for the year, giving net finance costs of £4.4m (FY 2018/19: £2.6m). The increase was primarily due to the adoption of IFRS 16 *Leases*, which resulted in the recognition of £1.2m of interest costs in relation to leases brought on to the financial position.

### Taxation

The total tax charge for the year was £1.1m (FY 2018/19: £6.6m) and the total effective tax rate was negative at (20.8)% (FY 2018/19: positive 24.9%). The underlying effective tax rate for the year was 26.3% (FY 2018/19: 22.2%), with the increase reflecting the impact on deferred tax as a result of the UK Government's decision not to implement a reduction in the tax rate from 19% to 17%.

Deferred tax assets of £9.4m (FY 2018/19: £6.7m) include £5.1m (USD 6.3m) (FY 2018/19: £4.9m (USD 6.3m)) of R&D tax credits in the US which continue to be recognised and have been partially utilised during the year. The Directors have considered



Ricardo supports Scotch Whisky industry with journey to Net Zero

the recoverability of these assets and remain satisfied that it is probable that sufficient taxable profits will be generated in the foreseeable future, against which the recognised assets can be utilised.

### Earnings per share

Basic loss per share was 12.2p (FY 2018/19: earnings per share 37.1p). The Directors consider that underlying earnings per share provides a more useful indication of performance and trends over time. Underlying basic earnings per share for the year decreased to 21.3p (FY 2018/19: 53.7p).

Basic loss per share is disclosed in Note 8 to the Group financial statements, alongside a reconciliation to underlying basic earnings per share, which excludes the net-of-tax impact of specific adjusting items.

### Dividend

The Group paid its FY 2019/20 interim dividend of 6.24 pence per share (£3.3m) on 6 April 2020. The Group paid a total dividend of 21.28 pence per share (£11.5m) in relation to FY 2018/19 performance. Due to the reduced performance experience by the Group in the second half of FY 2019/20, after careful consideration, the Board have decided not to recommend a final dividend for the year. This difficult decision has been taken to protect Group's financial position. The board recognises the importance of dividends to shareholders and intends to resume dividend payments as soon as it is appropriate to do so.

### Banking facilities

On 5 May 2020, the Group exercised £50m of the accordion option of its banking facilities, thereby increasing the Revolving Credit Facility ("RCF") to £200m and increasing the amount

undrawn and available to £70m. This provides the Group with increased committed funding available for the remaining term through to July 2023.

In addition to the increased committed funding available, the Adjusted Leverage (defined as net debt over underlying EBITDA) covenant was increased from 3.0x to 3.75x for the next two test dates of 30 June 2020 and 31 December 2020. Following the year end, on 9 September 2020, the definition of the Adjusted Leverage covenant for the December 2020 covenant test date was amended to be based on two times the six months' EBITDA to December 2020. In addition, the June 2021 covenant was increased to 3.75. The only other financial covenant is Interest Cover. This remains at 4.0x for each test date, but with the December 2020 test based on two times the six months' EBITDA to December 2020.

Net debt of £73.4m at 30 June 2020 comprised cash and cash equivalents of £66.3m and borrowing and overdrafts of £139.7m excluding finance leases. Total facilities before borrowings are £216.6m. This provides total cash and liquidity of £143.1m as at 30 June 2020.

The Group's committed facilities are denominated in Pounds Sterling and have variable rates of interest dependent upon the Group's adjusted leverage, which range from 1.4% to 2.2% (FY 2018/19: 1.4% to 2.2%) above LIBOR.

The group continues to have good access to liquidity and the Board remains focused on ensuring that the Group has the appropriate capital structure to ensure its ability to trade resiliently in these uncertain times as well as having the ability to successfully pursue its growth strategy. Further details are provided in Note 25 to the Group financial statements.

### Foreign exchange

On consolidation, revenue and costs are translated at the average exchange rates for the year. The Group is exposed to movements in the Pound Sterling exchange rate, principally from work carried out with customers that transact in Euros, US Dollars and Chinese Renminbi. Compared to the prior year, the average value of the Pound Sterling weakened by 3% against the US Dollar, and strengthened marginally against the Euro and the Chinese Renminbi. On a constant currency basis, underlying and underlying profit before tax on an organic basis would both have been £0.2m higher.

### Pensions

The Group's defined benefit pension scheme operates within the UK. The fair value of the scheme's assets at the end of the year was £150.4m (FY 2018/19: £137.5m). The accounting deficit measured in accordance with IAS 19 Employee Benefits was £6.7m before tax (FY 2018/19: £8.5m).

The £1.8m decrease in the pre-tax pension accounting deficit during the year was due a positive return on plan assets, offset by a reduction in the discount rate. £4.6m of cash contributions were paid to the scheme. Ricardo continues to fund the pension at £4.6m per annum until 31 July 2022.

# Segments review

## Overview

From 1 July 2019, the Group has reported the following reportable operating segments: Energy & Environment ('EE'), Rail, Automotive and Industrial ('A&I'), Defense, and Performance Products ('PP'). There is also an 'all other segments' segment, which comprises the results of Ricardo Strategic Consulting & Software, combined due to their size. Neither of these met the quantitative thresholds for reportable segments in FY 2019/20 or FY 2018/19. This change was driven by successful acquisitions in Rail and EE, increasing the prominence of these businesses within the Group, combined with the wish to provide more granularity into the key drivers of performance within the Group.

For the year ended 30 June	Revenue		Underlying <sup>(1)</sup> operating profit		Underlying <sup>(1)</sup> operating profit margin	
	2020 £m	2019 £m	2020 £m	2019 £m	2020 %	2019 %
Energy & Environment ('EE')	50.8	44.6	6.3	5.0	12.4	11.2
Rail	75.3	67.4	5.8	5.2	7.7	7.7
Automotive & Industrial ('A&I')	105.9	129.3	0.5	16.1	0.5	12.5
Defense	32.8	25.2	5.1	3.2	15.5	12.7
Performance Products ('PP')	69.0	95.4	5.0	9.9	7.2	10.4
Strategic Consulting & Software ('Other')	18.2	22.5	0.1	3.9	0.5	17.3
<b>Operating segments total</b>	<b>352.0</b>	<b>384.4</b>	<b>22.8</b>	<b>43.3</b>	<b>6.5</b>	<b>11.3</b>
Plc costs	-	-	(2.8)	(3.7)	-	-
<b>Total</b>	<b>352.0</b>	<b>384.4</b>	<b>20.0</b>	<b>39.6</b>	<b>5.7</b>	<b>10.3</b>

(1) Defined in the glossary of term on page 201.

EE, Rail, A&I, Defense (excluding the anti-lock braking system/electronic stability control ('ABS/ESC') product), and Strategic Consulting were previously reported within the Technical Consulting operating segment. PP, the ABS/ESC product, and Software were previously reported within the Performance Products operating segment. Plc costs include the costs of running the public limited company. FY 2018/19 segmental analysis has been reported on a consistent basis to aid comparability.

## Energy & Environment

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## Rail

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## Automotive & Industrial

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## Defense

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## Performance Products

See page 56



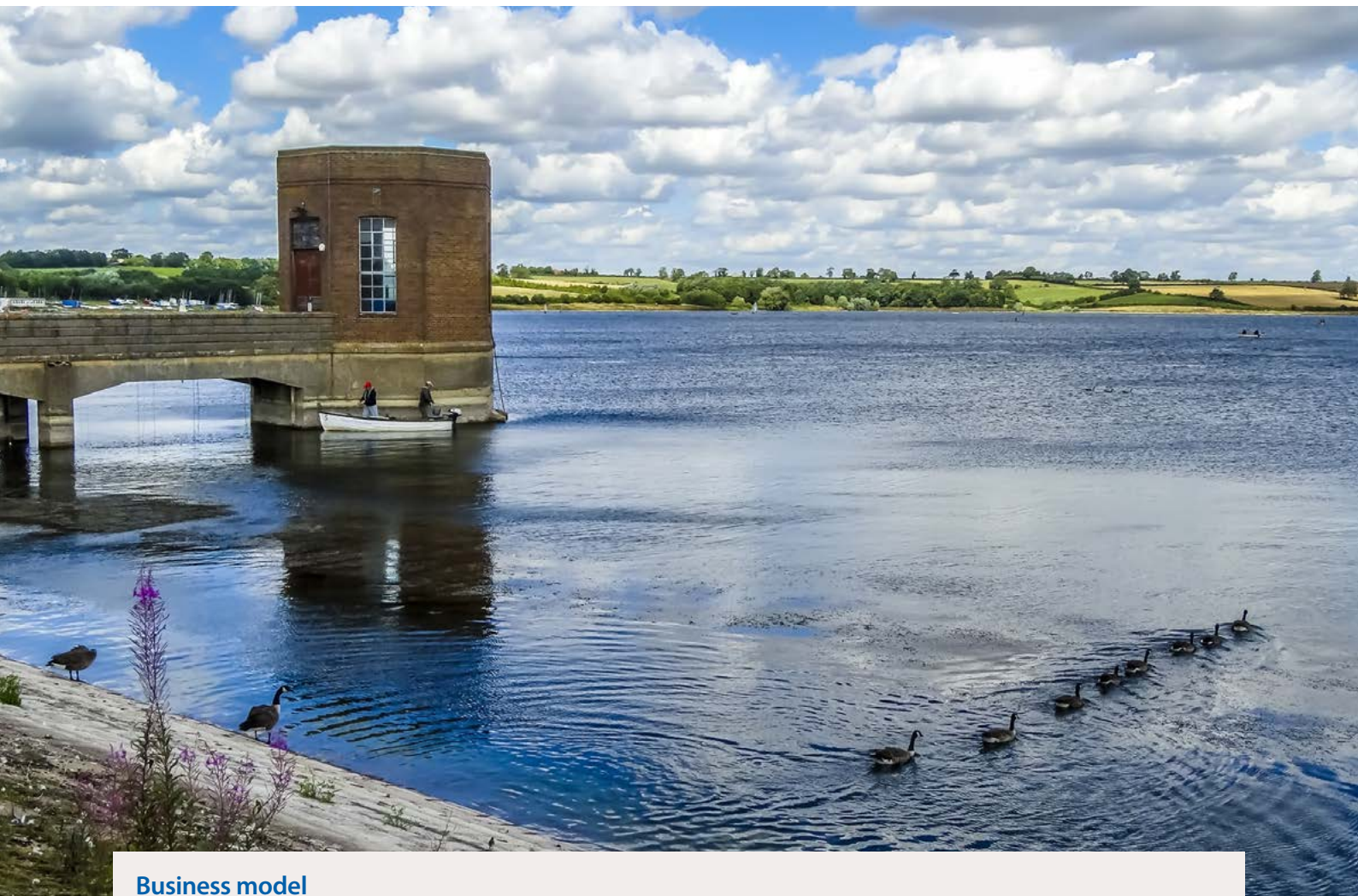
## Strategic Consulting & Software

See page 58





# Operating Segments Energy & Environment ('EE')



## Business model

Ricardo Energy & Environment ('EE') works with clients to solve some of the world's most complex environmental challenges, and provides governments, public agencies and businesses with industry-leading analysis, advice and data.

EE works across the value chain from gathering and evaluating evidence, setting policy measures, and working with its customers, partners and stakeholders to support the implementation of a wide range of solutions. For example, EE assesses the information impacting air quality within a city, works with stakeholders and leaders to derive policy options to improve air quality, and then supports the delivery of measures such as vehicle charging zones, bus retrofits or electric charging infrastructure. EE has over 500 expert consultants, including engineers, scientists, economists and data specialists operating in over 75 countries.

In FY 2019/20, EE's revenue grew by 14% to £50.8m (FY 2018/19: £44.6m) and underlying operating profit grew by 26% to £6.3m (FY 2018/19: £5.0m). FY 2019/20 was a successful year for EE, with the growth in revenue and operating profit reflecting a combination of organic growth and the successful acquisition, on 31 July 2019, of PLC Consulting Pty Ltd (renamed Ricardo Energy, Environment and Planning, or 'REEP'), which focuses on the waste and planning sectors in Victoria, Australia. On an organic basis, after normalising for the impact of the REEP acquisition, revenue and underlying operating profit grew by £4.0m (9%) and £0.5m (9%), respectively. Underlying operating profit margin increased from 11.2% in FY 2018/19 to 12.4% in FY 2019/20, driven by increased utilisation of staff and leverage of the cost base.

Order intake for FY 2019/20 was £56.0m (FY 2018/19: £46.1m), growth of 21%. At 30 June 2020, EE's order book was £41.7m (FY 2018/19: £35.6m). Of this, £0.8m relates to REEP.

International projects have expanded significantly, due to three principal factors: the acquisition of REEP; increased demand for our air quality and waste services in the Middle East; and growth in Europe; driven by economic and policy studies for the European Commission. EE has also won new projects in previously untapped territories, including a major air quality project in Lima, Peru, and a series of sustainable energy opportunities in the Caribbean.

EE has continued to see steady growth in work with UK public-sector customers, with increasing demand driven by the climate emergency and Net Zero agenda, as local authorities seek to

## Financial and operational highlights

### Order intake

+21%

Organic<sup>(1)</sup>+12%



### Order book

+17%

Organic<sup>(1)</sup>+13%



### Revenue

+14%

Organic<sup>(1)</sup>+9%



### Underlying<sup>(1)</sup> operating profit

+26%

Organic<sup>(1)</sup>+9%



### Underlying<sup>(1)</sup> operating profit margin

+1.2pp

Organic<sup>(1)</sup>0%



### Headcount<sup>(1)</sup>

+17%

Organic<sup>(1)</sup>+13%



(1) References in superscript are defined in the glossary of terms on page 201.

take action in cities and counties across the UK. This has added to EE's 40-plus year track record in operating a wide range of air quality/greenhouse gas modelling, inventory and monitoring projects, delivered on behalf of the UK Government. EE has also won a four-year extension to the Resource Efficiency Scotland programme, supporting small businesses in implementing energy and resource efficiency actions across Scotland.

EE has continued to see growth in UK private-sector work, where its principal clients are in the water and energy sectors. 2020 has seen the commencement of the new five-year UK Water Sector Asset Management Planning ('AMP') cycle. Although there had been a slight decrease in demand for EE's strategic water resource planning skills at the conclusion of the previous AMP cycle, EE has secured a range of new framework contracts, to run for the next five year AMP cycle with many of the largest water companies – including Southern Water, United Utilities, Yorkshire Water and Thames Water – to support them in planning the long-term future for sustainable water resources.

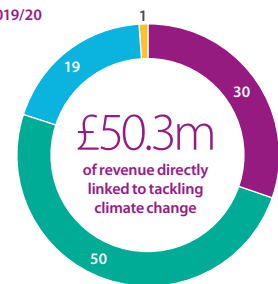
In the UK Energy sector, EE has won a major innovation project with Western Power Distribution ('WPD') and Electricity North West Limited ('ENWL') to trial a novel solution that enables increased numbers of high-power electric vehicle chargers to be connected to the electricity network at lower cost.

EE also supports the chemicals sector in the UK, including a relationship with the UK emergency services that goes

### Climate change and environmental revenue contribution

FY 2019/20 %

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



Around 80% of EE's FY 2019/20 revenue was directly driven by climate change or other environmental challenges such as air quality, water quality or waste management. Climate change driven projects include greenhouse gas inventory support, renewable energy projects, life cycle assessment, climate change policy studies and energy efficiency advice to businesses. The vast majority of EE's other revenues also provide environmental benefits. For example, power sector planning projects improve energy access and help decarbonise the electricity grid while chemical risk advice saves lives and reduces the environmental impacts of chemicals.

back 45 years; the practice also has international relationships with over 600 global chemical clients. This part of the business has seen revenue grow in this financial year as it sought to broaden its services to include a wider range of chemical regulatory consultancy, and work on Poison Centre notifications.

EE was not significantly disrupted by COVID-19, as the business found innovative solutions by working closely with our clients to ensure that we could maintain our services during a period of highly restricted travel. In order to continue to support its clients, the business adapted quickly to the challenges presented by remote working and the suspension of international travel.

## Outlook

EE ended the financial year with an order book and secured revenue that were both ahead of the prior year. Although the full extent of COVID-19 recovery plans and financing mechanisms are not yet known, EE is confident that economic stimuli will have a positive impact on its markets in FY 2020/21 and create opportunities, in particular the potential for re-alignment of UK and global economies to create a "clean and green" recovery. EE expects continuing growth across sectors, with recovery-led infrastructure projects driving the requirement for specialist input and support across EE disciplines.

Brexit preparedness has continued throughout the year with additional recruitment into European locations and continued close working with Ricardo colleagues operating within the EU.

EE's focus for FY 2020/21 will be on enhancing activity across EE's spectrum of services, from evidence and policy work through to supporting implementation solutions for clients. EE plans to continue to grow its air quality and greenhouse gases evidence expertise as well as developing its policy offerings to include new environmental topics and additional sectors. EE is already seeing strong demand in Europe with the implementation of the "Green New Deal" and expects to see stronger growth in the private sector, particularly in the UK water sector.



# Operating Segments

## Rail



### Business model

Ricardo Rail ('Rail') serves the global rail market through two separate operations: a consultancy unit that provides technical advice and engineering services, and a separate, independent entity, Ricardo Certification, that performs accredited assurance services.

Both have a similar geographic footprint across Europe, Asia-Pacific and the Middle East, and support a client base that includes rail operators, infrastructure managers, regulatory bodies and industry suppliers. Ricardo Rail employs 623 rail engineers, technicians, auditors and support staff, with key hubs in the UK, the Netherlands, China and Australia.

In FY 2019/20, Rail's revenue grew by 12% to £75.3m (FY 2018/19: £67.4m) and underlying operating profit grew by 12% to £5.8m (FY 2018/19: £5.2m). Underlying operating profit margin was stable at 7.7%. The growth in revenue and underlying operating profit was driven by the performance of Ricardo Rail Australia ('RRA'), which was acquired on 31 May 2019, and delivered a very strong set of results in the current year, in line with plan. The performance of RRA was offset by challenges in other areas of the business, in particular the UK, with reduced volumes on major UK certification projects, and Asia, with delayed mobilisation on large infrastructure projects. On an organic basis, after normalising for the impact of the RRA acquisition, revenue and underlying operating profit declined by £6.0m (7%) and £2.6m (31%), respectively.

FY 2019/20 order intake was £80.7m (an increase of £19.7m on FY 2018/19). £14.0m of the FY 2019/20 order intake was generated by RRA. The closing order book was £110.7m (FY 2018/19: £109.1m), of which £26.7m related to RRA (FY 2018/19: £30.1m).

The performance of RRA in its first full year under Ricardo ownership reflects the success of its established, long-term relationships with clients such as Transport for New South Wales, for which it has provided technical support throughout the introduction of new fleets onto the rail networks. RRA was

successfully integrated into the wider Rail business. Synergies from complementary skills have been realised. RRA has supported Rail's Middle East business, and UK Rail personnel have been actively involved in supporting major bids for RRA.

The Dutch consultancy team won several major assignments with Nederlandse Spoorwegen ('NS'), the principal passenger railway operator in the Netherlands, underlining the team's position as the pre-eminent engineering consultancy in Dutch rolling stock.

The UK consulting team had a challenging year with reduced volumes and personnel changes. COVID-19 also had some impact in the last quarter. Restructuring actions were completed during the year to align the business to market demand.

Performance in Asia was also mixed. This was the first region to be widely affected by the COVID-19 pandemic, with the Hong Kong operations already having experienced significant disruption as the office had been forced to close on several occasions during the autumn 2019 demonstrations. By way of a positive contrast, in Taiwan and Korea, the technical teams were engaged in some of the largest systems engineering projects of recent years.

The performance of Ricardo Certification remained resolute. The China team has a strong order book; the Middle East team secured notable wins in Qatar; whilst in Europe the team



## Financial and operational highlights

### Order intake

**+32%**

Organic<sup>(1)</sup>-2%

FY	£m
2019/20	80.7
2018/19	61.0

### Order book

**+1%**

Organic<sup>(1)</sup>+1%

FY	£m
2019/20	110.7
2018/19	109.1

### Revenue

**+12%**

Organic<sup>(1)</sup>-7%

FY	£m
2019/20	75.3
2018/19	67.4

### Underlying<sup>(1)</sup> operating profit

**+12%**

Organic<sup>(1)</sup>-31%

FY	£m
2019/20	5.8
2018/19	5.2

### Underlying<sup>(1)</sup> operating profit margin

**Opp**

Organic<sup>(1)</sup>-2.6pp

FY	%
2019/20	7.7
2018/19	7.7

### Headcount<sup>(1)</sup>

**-2%**

Organic<sup>(1)</sup>-2%

FY	Number
2019/20	623
2018/19	636

(1) References in superscript are defined in the glossary of terms on page 201.

continues to support London's Crossrail and the re-signalling of the Danish rail network, and awaits the commencement of several rolling stock projects.

## Outlook

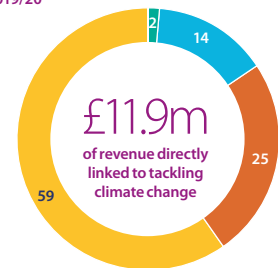
Looking ahead, the Rail segment has a healthy and varied portfolio of projects. These include projects in new areas such as digital resilience and vehicle decarbonisation, as well as traditional assurance projects such as Seoul's Great Train eXpress and Beijing Metro Line 17. As a result, Rail enters FY 2020/21 with one of its largest ever order books.

Due to its presence in a number of European Union countries and having moved quickly to organise the necessary

### Climate change and environmental revenue contribution

FY 2019/20 %

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



Railways represent the mode of transport that has the lowest impact on the environment and the majority of railways in the markets Rail serves are already fully electrified. Rail supports the procurement of upgrades to infrastructure and rolling stock that are being introduced for reasons that do not have a direct additional environmental benefit. In many cases, Rail provides the system safety engineering and certification of the upgrades to ensure the railway is safe for passengers to use and workers to operate and maintain. Ricardo Certification assesses and accredits railways to ensure they comply with the strict standards for use and provide the assurance required to operate the railway to design requirements.

Core to Rail's strategy is meeting the key industry challenges of carbon, cost, capacity and customer experience. Revenue streams which have environmental benefit as their key driver include projects which improve rail systems to optimise the use of assets by (a) reducing the quantity of rolling stock and spares by making trains more reliable and available; and (b) increased use of sustainable materials for fuels and components.

Rail is increasingly focusing on securing projects that deliver electrification and solutions that decarbonise railways, such as hybridisation and battery electric trains, together with projects that deliver energy efficiency improvements as railway systems look to reduce the consumption of energy and increase the use of energy from renewable sources.

accreditations in Denmark and the Netherlands, Ricardo Rail is well positioned to continue consulting projects and certification work in the EU without disruption after Brexit.

Whilst there is no doubt that the COVID-19 pandemic will continue to impact travel habits over the short and medium term, there is little to suggest any serious long-term ramifications for the rail sector. Rail, whether in the form of rapid transport systems in major city centres or as national networks of high-speed routes, remains an essential component of sustainable travel policies. As well as new builds to support growing urban centres, we expect to see continued investment in the modernisation of mature networks to seek continued improvement in safety, efficiency and performance.



# Operating Segments Automotive & Industrial ('A&I')



## Business model

Ricardo Automotive & Industrial ('A&I') serves as a trusted global engineering design and development partner for the provision of clean, efficient, integrated propulsion and energy solutions across the areas of hybrid and electric systems, electrification, engines, driveline and transmissions, testing, and vehicle engineering. Customers span the transportation and industrial markets, including automotive, aerospace, defence, energy, off-highway and commercial, marine, motorcycle and light-personal transport, and rail.

A&I has 1,154 staff, operating from engineering centres and sales offices within the UK, Europe, US, and Asia (primarily in China).

A&I was impacted by continuing challenging economic and political conditions during the year. China's slowing economic growth, trade tensions between the US and China, reduced credit availability in India, Brexit and the UK General Election all had an impact on customer activity and orders. This was compounded by the impact of COVID-19 in the second half of the year, initially within China and then Europe and the US. With populations in lockdown, customers responded by temporarily shutting down their operations, implementing part-time working, mothballing manufacturing facilities, and implementing significant cost-reduction measures.

Order intake held up relatively well, reducing by 7% from £123.6m in FY 2018/19 to £115.3m in FY 2019/20. The economic circumstances had a more significant impact on revenue and operational efficiency as a number of customers delayed non-business critical projects. Revenue decreased from £129.3m in FY 2018/19 to £105.9m in FY 2019/20, and underlying operating profit decreased from £16.1m in FY 2018/19 to £0.5m in FY 2019/20, with underlying operating margin decreasing from 12.5% to 0.5%. Within this, the business in Europe remained profitable. The US business continued to be loss-making and has taken significant steps to restructure its operations, as set out below. The China business ended the year with a small loss.

New Managing Directors joined A&I's European and US operations during the year. Both have had, and continue to have, a

focus on strategy and business development, whilst continuing to ensure that the resources within the engineering teams are suitably matched with client needs and market opportunities.

A&I has continued with its strategy to create a more flexible cost base and become an operationally efficient consultancy. In August 2019, the Detroit Technology Campus ('DTC'), comprising its engine testing and office buildings, was purchased in order to extricate the business from a long-term lease on the property. In June 2020, the Detroit engine testing business (together with the DTC engine testing building) was sold to a non-competitive strategic partner for an initial cash consideration of £2.8m (USD 3.5m), with up to £1.6m (USD 2.0m) deferred, reducing A&I's fixed cost base and allowing A&I to continue to offer test services locally in its overall offering to customers. The DTC office building is currently being marketed and is held-for-sale on the June 2020 statement of financial position. In June 2020, we also exited our Santa Clara Technical Centre ('SCTC') and aftertreatment business and set up new premises in Southern California, in order to develop new market opportunities aligned with the business' strategic goals.

Subsequent to the opening of the Southern California site, A&I strengthened the US team with a senior appointment to lead the transformation of engineering operations, particularly in the areas of electrification and software. The team in Southern California recently secured a £3.2m win with the US Department of Energy to advance the development of high efficiency silicon carbide

## Financial and operational highlights

### Order intake

-7%



### Order book

+3%



### Revenue

-18%



### Underlying<sup>(1)</sup> operating profit

-97%



### Underlying<sup>(1)</sup> operating profit margin

-12pp



### Headcount<sup>(1)</sup>

-5%



(1) References in superscript are defined in the glossary of terms on page 201.

inverters for electric vehicle applications.

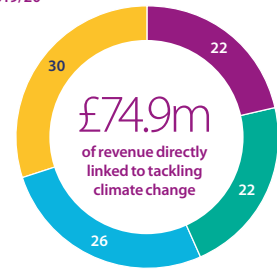
As the COVID-19 pandemic developed and lockdown hit the various parts of the business, A&I responded immediately. Almost overnight, those who could work from home did, whilst those who were not able to work from home continued supporting the business and client projects on site, with the business ensuring staff were able to work safely by amending working practices in line with safety guidelines. A&I also re-evaluated its strategy and made the difficult decisions required to quickly reduce the cost base and help protect our employees, including some use of local furlough schemes.

Over the course of the year, A&I secured and delivered a range of successful customer programmes across the transportation and industrial markets, which included: supporting CNH Industrial with the development of a biomethane-powered tractor; selling its CryoPower clean engine intellectual property to FPT Industrial S.p.A whilst continuing to assist in their development of this innovative and high-efficiency combustion engine; delivering a highly versatile and cost-effective vehicle demonstrator for general service defence purposes, adapted from Ford's iconic *Ranger* series, Europe's best-selling pick-up truck; partnering with Nexperia to produce a technology demonstrator for an EV inverter based gallium nitride technology; and delivering safety-critical transmission control software for China Euro Vehicle Technology AB for a 7-speed dual clutch transmission in a compact luxury crossover SUV. In addition, A&I also played a crucial role in the development of JCB's Fastrac tractor, in which Guy Martin set a

### Climate change and environmental revenue contribution

FY 2019/20 %

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



Approximately 70% of A&I revenue comes from activities generating a positive environmental impact with over 20% specifically intended to address the challenge of climate change. A&I's contributions consist of cutting-edge propulsion system developments, which reduce carbon emissions where internal combustion engines remain the most appropriate technology, through to next generation electrical energy storage systems, which power the growth in electrified propulsion. A&I's continued contributions to the automotive and industrial transportation markets, as well as its focus on the growing sectors of clean aviation and alternative fuels, reinforce A&I's mission to deliver environmentally sustainable technological innovation.

new Guinness World Records' speed record, as shown on the Channel 4 documentary, *Guy Martin: The World's Fastest Tractor*.

During the COVID-19 lockdown period, A&I has focused on how to support its customers in innovative ways. A&I implemented a 'world first' in virtual vehicle certification, whereby customers and certification bodies could observe tests via a secure, live 3-way feed to the automation and data management systems of A&I's advanced UK test facilities. Reflecting the needs of global customers working from home, but still wanting to access our thought leadership and interact with our technical experts, A&I prioritised digital engagement. A&I subject matter experts delivered 14 webinars (3 with Automotive World, 11 own label Ricardo Technology Webinars) which saw A&I engage with just over 6,000 contacts on key industry challenges where A&I offer world-leading technical solutions such as preparing for Euro 7, fuel cells for heavy duty trucks, off-highway electrification, xEV holistic thermal management, and the road to zero carbon. As part of its digital-first strategy, A&I also focused on LinkedIn as a primary engagement channel for customers, and broader audiences across industry, media, government, academia and communities across the world. The A&I corporate presence on LinkedIn attracted particularly strong engagement in relation to content posts about its design, assembly and delivery of PPE, and grew its community of followers to just over 50,000.

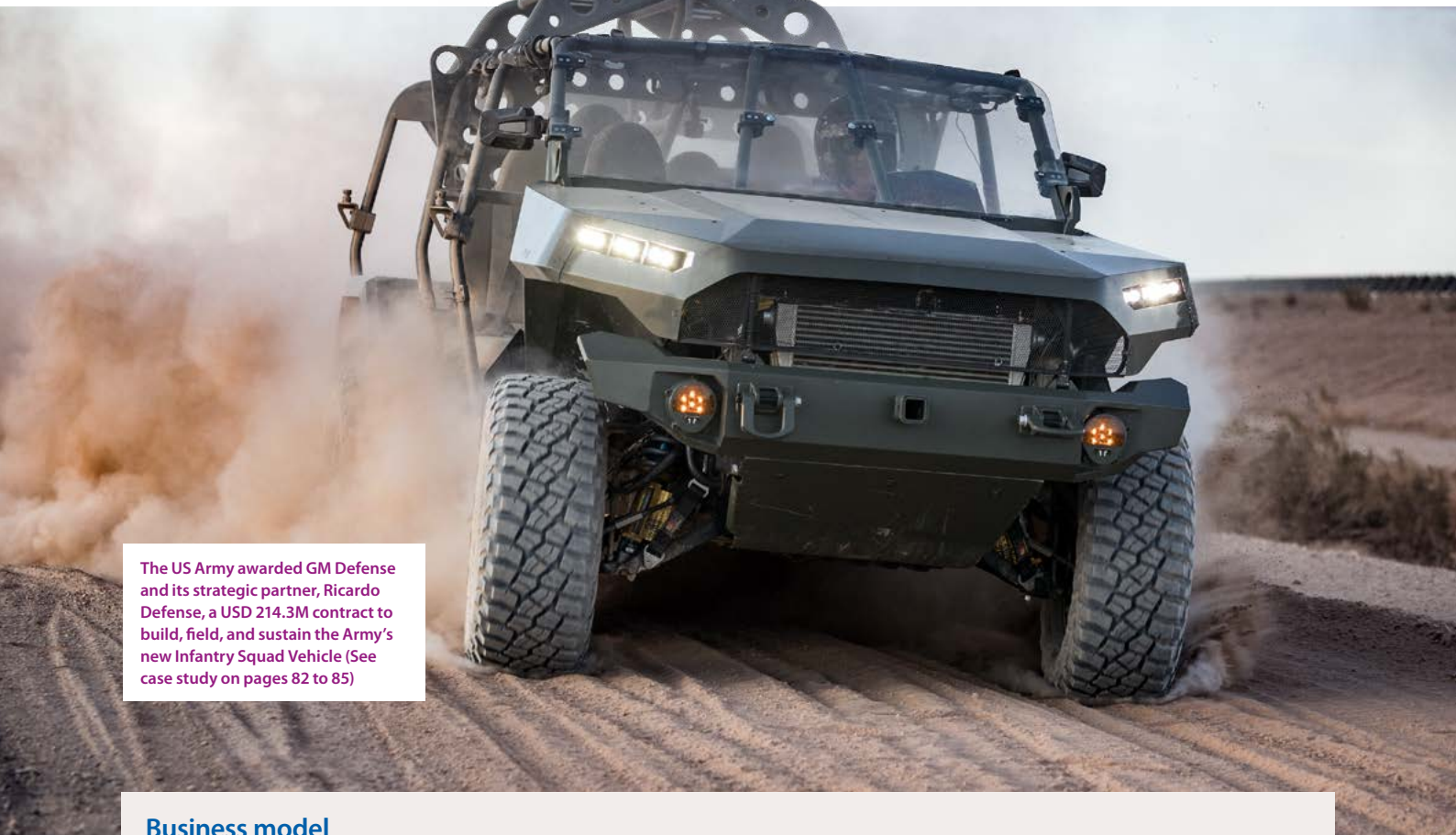
### Outlook

Carbon dioxide ('CO<sub>2</sub>') emissions targets continue to drive the global agenda, with industry increasing its investment in electrification and alternative energy propulsion, together with its digitalisation of processes and products. Whilst COVID-19 may affect some markets in the coming year, the global agenda still continues to provide a significant longer-term pipeline of opportunities to A&I for the provision of innovative clean, efficient, integrated propulsion and energy solutions for customers within our transportation and industrial markets.



# Operating Segments

## Defense



The US Army awarded GM Defense and its strategic partner, Ricardo Defense, a USD 214.3M contract to build, field, and sustain the Army's new Infantry Squad Vehicle (See case study on pages 82 to 85)

### Business model

Ricardo Defense ('Defense') is focused on the delivery of services, software and products that protect life and reduce defence programme costs and waste. Defense delivers wide-ranging engineering programmes across light and heavy land and sea theatres of operation, supporting clients to improve processes to streamline the fielding, modification, maintenance and support of complex systems used in operational planning. This includes providing enterprise software to enable the electronic distribution of technical data, ensuring data integrity and cyber security across disrupted communication environments. Defense also provides anti-lock braking system/electronic stability control ('ABS/ESC') systems for all new production High Mobility Multipurpose Wheeled Vehicles ('HMMWV' or 'Humvee') for the US Army and National Guard.

Defense's staff of 162 technical professionals and support staff is based across the US, including major centres in Michigan and California.

Defense delivered strong growth in FY 2019/20, with revenue increasing by 30% to £32.8m (FY 2018/19: £25.2m) and underlying operating profit increasing by 59% to £5.1m (FY 2018/19: £3.2m). Underlying operating profit margin increased from 12.7% in FY 2018/19 to 15.5% in FY 2019/20. Growth was driven by increased activity in the engineering services business and sales of the ABS/ESC product. The underlying operating profit margin was low in the prior period as costs were increased in preparation for the delivery of ABS/ESC units.

Order intake reduced by 26% to £29.0m (FY 2018/19: £39.0m): this reflects the timing of ABS/ESC orders, with Defense having secured a large order from the US Government in the prior year, delivering these units in FY 2019/20. The FY 2019/20 closing order book was £15.6m (FY 2018/19: £20.3m), with the reduction reflecting the timing of ABS/ESC orders.

Defense designed, developed and integrated the ABS/ESC kit to address an ongoing HMMWV rollover issue. The system has been proven by the US Army to mitigate vehicle rollover and loss-of-control accidents. Defense delivered 2,464 ABS/ESC kits for new HMMWVs production vehicles in FY 2019/20 (FY 2018/19: 1,650). This includes the first shipments of retrofit kits to a non-US country to upgrade the safety, performance, and reliability of their HMMWVs.

Underpinning its commitment to quality, Defense again achieved Capability Maturity Model Integration ('CMMI') Level 3 certification for its systems and software development processes. Defense is supporting the US Army and Marine Corps in the integration of a wireless, dismounted communication system solution for ground support vehicles; the system enhances the safety and situational awareness for combat personnel conducting dismounted operations on or around vehicle platforms. Through operational user testing,

## Financial and operational highlights

### Order intake

-26%



### Order book

-23%



### Revenue

+30%



### Underlying<sup>(1)</sup> operating profit

+59%



### Underlying<sup>(1)</sup> operating profit margin

+2.8pp



### Headcount<sup>(1)</sup>

+17%



(1) References in superscript are defined in the glossary of terms on page 201.

integration and sustainment planning, and cyber security strategy, Ricardo Defense uses commercial off-the-shelf solutions to provide mission-ready, cost-effective solutions that protect lives and enhance communication in a rapid and efficient manner.

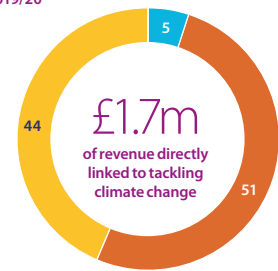
As the US Department of Defense seeks more agile development and deployment of enhanced technologies, Defense is providing solutions for designing, acquiring, integrating and sustaining future systems through model-based system engineering methodologies. These methodologies enable rapid and robust analysis, configuration, change management, and integration of emerging disruptive technologies. By creating “digital twins” of vehicle systems, Defense supports the US military in developing, fielding, maintaining and effectively using the most capable equipment in order to maximise the safety of serving personnel.

COVID-19 has not had a significant impact on Defense, which has been designated by the US Government as critical to US infrastructure. During the COVID-19 pandemic,

### Climate change and environmental revenue contribution

FY 2019/20 %

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



By developing and integrating new processes, technologies and software, Defense provides customers with enhancements in organisational performance while also realising associated benefits to the environment. A particular area of focus is on the development of products and services that support Ricardo's digitalisation strategy, reducing the need for prototype manufacturing through simulation and automation, eliminating the material waste associated with sample vehicle builds. A significant portion of the Defense business is targeted toward protecting human life by improving the safety of vehicles used by US and international service-members around the globe.

the majority of Defense's employees continued delivering programmes safely and securely through remote work-from-home during the US “Stay Safe, Stay at Home” mandate.

## Outlook

The market outlook for our Defense business is positive. The US President's FY21 Defense Budget reflects funding priorities of USD 740 billion for national defence. The proposed budget includes a mix of funding for the procurement and deployment of the ABS/ESC retrofit kit and additional new production kit orders. Accordingly, Defense has expanded its ABS/ESC operations to meet anticipated demand for the coming year.

In addition, Defense expects growth in its software business as well as significant growth in its established capability areas of system life cycle management, field support services, and condition-based maintenance. Ricardo Defense is firmly embedded in nearly every end-to-end architecture node of the U.S. Army's fielding strategy. Defense's systems engineers, software developers, and logisticians provide integrated life cycle support services that will improve the operational readiness of US and allied assets worldwide.

Ricardo Defense is providing software that improves the management of fuel and other consumable commodities across an enterprise



The appearance of US Department of Defense (DoD) visual information does not imply or constitute DoD endorsement.



# Operating Segments Performance Products ('PP')

Bentley Continental GT3 on its way to victory at the "Liqui-Moly Bathurst 12 hour" with a Ricardo designed and manufactured transmission.



## Business model

Ricardo Performance Products ('PP') manufactures and assembles niche high-quality components, prototypes and complex products, including engines, transmissions and other precision and performance-critical products. PP also provides manufacturing and supply-chain services to enable products to move from concept to production for customers around the globe. PP manages the complete process, from establishing a robust supply chain, to the efficient delivery of the tested end-product to its prestigious customer base. These products are either designed by the motorsport products design team, other Ricardo divisions or by PP customers themselves. PP serves customers manufacturing low-volume, high-performance products in markets such as motorsport, automotive, aerospace, defence and rail.

PP employs 311 staff, with specialist capabilities in product design and development, production and operations management, supply-chain development, industrial engineering and skilled production, all based in the UK. PP is backed by Ricardo's global support network with technical and engineering centres around the world.

In FY 2019/20, PP's revenue reduced by 28% to £69.0m (FY 2018/19: £95.4m) and underlying operating profit declined by 49% to £5.0m (FY 2018/19: £9.9m). Underlying operating profit margin decreased from 10.4% in FY 2018/19 to 7.2% in FY 2019/20. Order intake was £71.1m in FY 2019/20, a reduction of £25.1m compared to order intake of £96.2m in FY 2018/19. As at 30 June 2020, the order book was £62.8m (FY 2018/19: £66.5m).

The reductions across the key metrics were primarily due to a reduced volume of engines supplied to McLaren. In the first half of the financial year, engine output was lower than the previous six months, in line with an agreed production plan. In the second half of the year, output was significantly disrupted due to the effects of the COVID-19 lockdown, with McLaren suspending vehicle production from March onwards. The volume of engines delivered in FY 2019/20 was approximately

40% lower than the prior year. Over this period, two new engine variants entered production, including the latest vehicle in McLaren's Ultimate Series, the "Speedtail". The engine for this vehicle, code-named P23, sits at the heart of an advanced hybrid powertrain and powers the car to over 250mph (400 km/h), making this the fastest McLaren ever produced. FY 2019/20 also saw the completion of significant pre-production activities in readiness for the new engine variant to be launched in FY 2020/21.

FY 2019/20's results were also impacted by the scheduled end of the Porsche 991 Cup transmission programme in FY 2018/19. During the year, PP was successful in securing a replacement programme of an equivalent size and duration (which is reflected in the FY 2019/20 order intake). Deliveries to this programme are on track to start in the first half of FY 2020/21.



## Financial and operational highlights

### Order intake

-26%



### Order book

-6%



### Revenue

-28%



### Underlying<sup>(1)</sup> operating profit

-49%



### Underlying<sup>(1)</sup> operating profit margin

-3.2pp



### Headcount<sup>(1)</sup>

+1%



(1) References in superscript are defined in the glossary of terms on page 201.

A programme to supply transmissions for the Aston Martin Valkyrie, which was expected to go into production in 2020, is now confirmed for the FY 2020/21 business year. A significant number of prototypes for this programme were delivered in FY 2019/20 to support the successful testing and validation of this advanced hybrid hypercar. PP continues to support Bugatti with the supply of the complete driveline system for the Chiron hypercar. Demand for Bugatti transmissions continued in line with expectations.

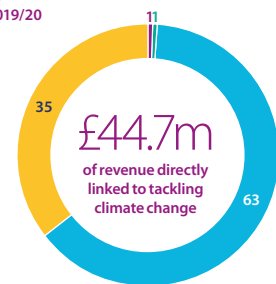
PP's contract with the Ministry of Defence, to refurbish gearboxes for their Combat Vehicle Reconnaissance (Tracked) (CVR(T)) vehicle, successfully started in FY 2019/20 and remains on track to be completed ahead of customer expectations in December 2020.

PP remains a key supplier into the motorsport sector, with effective cost of ownership solutions for the customer racing market and the ability to adapt to the ever-changing regulations in all forms of factory racing to deliver a competitive advantage to customers. PP remains ever present at the top tier of world motorsport and has manufactured transmissions components to teams competing in Formula One, Formula E, GT3, R5, Super Formula and Indy Lights. PP's customers have secured world championships and key victories in Formula E, WRC and GTE. During the year, PP extended its collaboration with DS Performance, building on an incredible 2019 season, in which PP designed and supplied transmissions for the team which won both the drivers' and teams' championships.

### Climate change and environmental revenue contribution

FY 2019/20 %

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



Whilst PP may not have direct involvement in supporting the environmental driver on customer projects, PP is directly involved in actions to improve the overall efficiency and performance of engine and transmissions, thereby lowering, or at least maintaining their environmental impact.

A small amount of PP's revenue is generated through projects that directly address climate change or other environmental challenges. PP supports programmes that include the development and manufacture of transmissions for use in electric vehicles, such as Formula E, together with the manufacture of hybrid engines and hybrid transmission systems

## Outlook

McLaren engine production resumed in July 2020, with a planned gradual ramp-up of output through the year as part of its plans to initially focus on limited-series models (predominately the 'Ultimate' and 'Super Sports' series of cars).

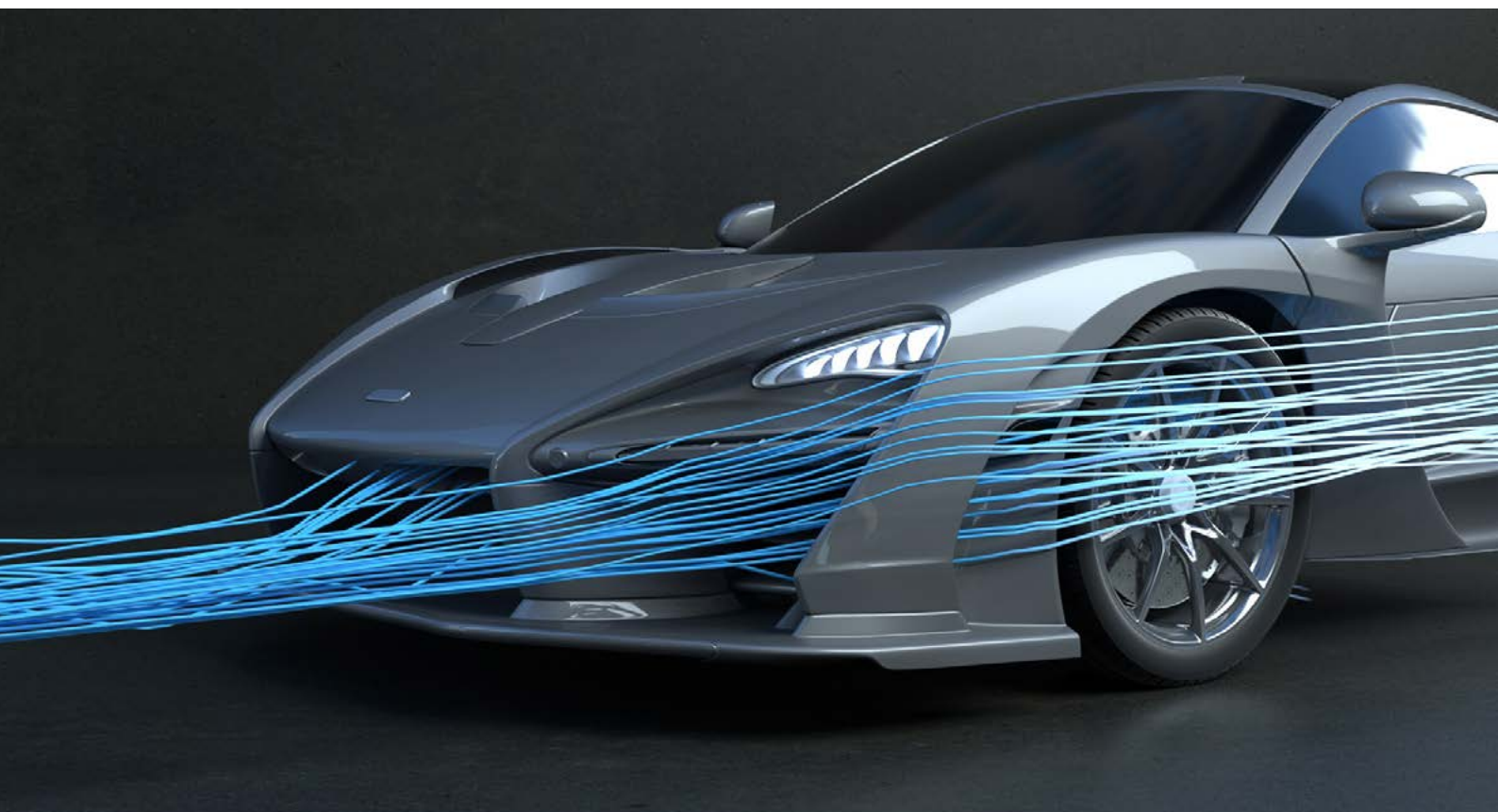
Although PP's transmission manufacturing capabilities were not significantly impacted by COVID-19 during FY 2019/20, and production continued throughout the outbreak under carefully controlled manufacturing conditions, the pandemic has created delays and cancellations of multiple races and championships, with the potential to impact some of PP's motorsport clients.

PP will continue to focus its efforts on established markets such as high-performance automotive, motorsport and aerospace; additional focus will be applied to both the defence and the rail markets, where significant contract opportunities exist. These opportunities are enhanced by PP's ability to utilise the in-depth design capabilities of Ricardo's engineering consulting divisions, providing a comprehensive set of solutions across all PP's targeted markets.

With both customers and suppliers in the EU, PP has established processes and procedures to address a variety of potential Brexit scenarios. These capabilities were successfully deployed in both 2018 and 2019 in readiness for possible hard exits from the European Union and remain in place for 2020 onwards.

# Operating Segments

## Strategic Consulting & Software



### Business model

Ricardo Strategic Consulting ('RSC') is a leading management consultancy dedicated to serving the automotive, transportation, and mobility industries. It offers a comprehensive portfolio of services, advising global leaders on high-impact strategic issues and resolving operational challenges. RSC provides both corporate and strategic business advice which spans the full product life cycle, including product development, manufacturing and supply chain management, procurement, sales, marketing and distribution, and integrated cost reduction.

Software helps customers solve problems through technology exploration and process innovation. It also delivers advanced virtual engineering tools and solutions, supported by a team of technical experts, to global customers across the automotive, rail, motorcycle, off-highway, defence, energy and environment industries. Software's leading-edge simulation software provides customer solutions to reduce cost, resources and time to market, while efficiently managing complexity and safety.

Combined, RSC and Software employ 182 staff, based across the UK, continental Europe, the US, China and India.

Strategic Consulting & Software revenue reduced to £18.2m in FY 2019/20 from £22.5m in FY 2018/19. Underlying operating profit reduced from £3.9m to £0.1m in the same period. Underlying operating profit margin fell to 0.5% from 17.3%. The declines seen over the period reflect a combination of challenging trading conditions in the automotive market and the impact of customers reducing spending during the COVID-19 pandemic in the second half of FY 2019/20.

During FY 2019/20, RSC delivered growth in order intake in Europe and Asia following the investment in its regional sales teams. However, in the second half of the year there was a reduction in orders across the business, as long-running programmes came to an end and new order intake became challenging. RSC was immediately impacted by COVID-19, with the pandemic leading to the postponement of certain projects

and delays in client decisions.

A softening in the US market has impacted profits, but the strong relationship with Ford has continued. In addition to long-running integrated cost reduction programmes, RSC supported them in managing distressed supplier scenarios, which has become a key area of growth.

In FY 2019/20, Software order intake was below the prior year, driven by lower one-off perpetual licence sales, particularly in China, due to the slowdown in the Chinese automotive market and impact of COVID-19. The pandemic led to some delays in new business wins, due to travel restrictions and the closure of some customer sites. Licence renewals were also below the prior year driven by some customers reducing the number of licence seats they hold. There has been good growth in order intake for application engineering and solutions in the year, which has

## Financial and operational highlights

### Order intake

-18%



### Order book

-20%



### Revenue

-19%



### Underlying<sup>(1)</sup> operating profit

-97%



### Underlying<sup>(1)</sup> operating profit margin

-16.8pp



### Headcount<sup>(1)</sup>

-7%



(1) References in superscript are defined in the glossary of terms on page 201.

partially offset the reduced order intake from one-off perpetual licence sales and renewals.

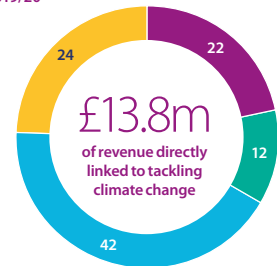
## Outlook

Strategic Consulting & Software's core automotive markets are expected to remain challenging over the next financial year. RSC is focusing on diversification into new sectors and service lines, which has progressed with the development of the TRNTY online consulting platform and Ricardo Knowledge (RSC's digital channel) products. These products provide an efficient route to market to commercialise Ricardo's expertise. The investment made in the year in these new product offerings will begin to deliver revenue growth in the new financial year. In addition, RSC, in partnership with Ricardo EE, have combined environmental expertise with strategic advice to offer a unique external Taskforce on Climate-related Financial Disclosures ('TCFD') service offering, aimed at improving business resilience in the face of climate change.

### Climate change and environmental revenue contribution

FY 2019/20 %

- Driven by climate change
- Driven by an environmental issue
- Has environmental benefits
- Relates to safety
- None of the above



RSC supports a variety of projects which are positively impacting climate change and the environment, including providing on-site support to all-electric vehicle suppliers, supporting the increase in production of wind turbine blades, supporting the development of battery packs for electric vehicles, and providing bill of material and cost analysis for battery packs, fuel cells systems, and electric marine engines. RSC has also provided support to clients in mapping environmentally focussed regulations, policies and initiatives.

Ricardo's Software products have historically been used by clients to improve fuel consumption and engine performance, reduce weight, and improve emissions. Software is seeing a demand for its products to perform hybrid vehicle transmission and is actively growing its capabilities in battery analysis.



Software's strategy is focused on building an integrated market-leading portfolio of products and solutions that work across different engineering domains to provide value to customers. In the year ahead, this will include a move to offering web- and consumption-based licensing models to complement its traditional on-premise annual lease and perpetual licence business. As travel restrictions are expected to persist, Software will maximise local regional resources and digital technology to win new business.

Our 2019/20 Strategic Report, from page 1 to page 59, has been reviewed and approved by the Board of Directors on 9 September 2020

Dave Shemmans,  
Chief Executive Officer





# Case studies

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# Improving sustainability in the farmed and wild landscape

The way that land is managed can have a significant impact not only on the immediate greenhouse gas balance of agricultural systems, but also on their longer-term environmental sustainability. The Ricardo Energy & Environment agriculture team is helping farmers, land managers and food manufacturers apply the latest thinking for both the farmed and the wild landscape.





**A**griculture is much like any other industry when it comes to the evaluation of its greenhouse gas ('GHG') emissions. The carbon footprint of agricultural business operations and the value chain of food products from farm to fork can be calculated using a broadly similar approach to that used for any other commercial activity or industry: each process, from tilling the soil ready for planting, through to harvest, together with the downstream supply chain of storage, processing, distribution and marketing, will be associated with a range of inputs and outputs. Seen in GHG terms, these correspond to emissions to the atmosphere and removals from the atmosphere. The cycle of livestock husbandry can be treated in much the same manner. Most conventional industries will typically involve only

emissions of GHGs. Agricultural processes, by contrast, can also give rise to 'removals' of carbon from the atmosphere; carbon that is then stored in a stable and non-gaseous form. Perhaps the best known of these processes is photosynthesis, through which plants and trees absorb carbon dioxide to create the starches, sugars and structural materials that they need to grow. Agricultural GHG emissions are dominated by methane and nitrous oxide, with carbon dioxide forming a smaller contribution within day-to-day operations but a much greater one in terms of carbon emitted from, or removed into stored organic carbon in soil or woody plants.

### **Terrestrial carbon stores**

Although atmospheric carbon dioxide emissions have been



## Improving sustainability in the farmed and wild landscape

building up over the 260 years since the start of the industrial revolution, soils contain approximately twice as much carbon as is present in the air. So, in addition to ensuring that agriculture is as efficient as possible in its day-to-day GHG emissions, the effective stewardship of these terrestrial carbon stores is of crucial importance.

For example, in arable cropland there is likely to be a net emission over each year as carbon is lost from the soil by oxidation, and little of the plants' root systems will remain within the soil in the long term. Conversely, in grassland there is likely to be a net removal of carbon from the atmosphere as the plants are perennial and there is little or no soil cultivation. In commercial forestry the carbon removal into wood may remain locked up long after the tree is felled if, for example, the timber is used in building materials. But if the felled wood is used to create biomass pellets for combustion, the removed carbon is emitted back to the atmosphere.

When land use changes, and a forest or a production system that is removing atmospheric carbon turns into a system that begins emitting stored carbon, large and rapid GHG emissions can result. These can dwarf the usual annual emissions of methane and nitrous oxide associated with agricultural production. Conversely, land-use change from a system that is emitting stored carbon to a system that is removing atmospheric carbon has the opposite effect, but the removals tend to build slowly over many years.

### Ricardo agriculture team expertise

Estimating the overall net GHG emissions and removals from farms and farmland, and taking account of carbon stock change in and on land, is a particular specialism of the Ricardo agriculture team. The requirement to investigate may come from a large food manufacturer that wishes to ascribe a carbon footprint to its products as they reach the consumer. For larger

brands this might involve groups of farms which need to be assessed in terms of multiple inputs and outputs, including crops and their rotations, as well as details of livestock enterprises. Strategic advice is also often required in terms of farmland management, including the assessment of non-productive areas of land such as hedgerows, field margins and unmanaged farm woodlands.

In addition to the agricultural incentives that are available to farmers for particular initiatives – for example to improve biodiversity and availability of natural pollinators – this form of analysis is important in helping farms move towards Net Zero emissions, and by extension to improve the carbon footprint of food products manufactured from their produce and livestock.

Ricardo provides advice and a holistic approach not only when it comes to the farmed and managed environment but also to other major non-farming landowners and to non-agricultural businesses conducted by farms. For example, water and energy companies are businesses that are tasked with transitioning their operations towards a Net Zero future, but at the same time they are also responsible for the management of significant land holdings. Similarly, many farm-based businesses are finding direct incentives from favourable electrical feed-







Ricardo's advice can be crucial in improving the environmental footprint of agriculture at the same time as maintaining our precious terrestrial carbon stocks

in tariffs to pursue micro-generation enterprises such as the production of renewable power from biomethane derived from anaerobic digestion. For consulting engagements such as these, the Ricardo agriculture teams often collaborate with colleagues serving the utilities and power sectors, to ensure that an informed and holistic approach can be considered.

### Protecting natural carbon repositories

In the context of a noted wild landscape, the Ricardo agriculture team was awarded a contract by World Wide Fund for Nature ('WWF') Scotland to investigate the aftermath of a May 2019 peatland wildfire that occurred in the internationally important blanket peat bog of the 'Flow Country' of north-east Sutherland in Scotland's Highland region.

Two complementary approaches were used. In the first, satellite images were employed to estimate the extent of the burned area, alongside a literature review to determine typical carbon losses due to peatland fire, focusing on studies of fires and terrains as similar as possible to those of the Flow Country. The second approach involved the application of methods used in inventory calculations, published by the Intergovernmental Panel on Climate Change ('IPCC'). Both approaches provided a broad level of agreement.

Illustrating the significance of carbon dioxide emissions from this type of peat wildfire, the study provided a low-range estimate of 174,000 tonnes of carbon lost from the peatland into the atmosphere during the six days that the fire burned. To put this into perspective, this carbon release to the atmosphere is equivalent to the average greenhouse gas emissions of the entire nation of Scotland for nearly a week.

### Helping to ensure future sustainability

Whether it is for the protection of natural carbon repositories or for the optimisation of farming operations for maximum efficiency and minimum environmental impact, the holistic approach of the Ricardo agriculture team provides valuable guidance in moving towards true sustainability. Until recently, the usual focus for the environmental assessment of the carbon footprint of food products has been the analysis of the field from which the crop is grown and the net emissions of downstream production activities. Increasingly, however, governments, food manufacturers, supermarkets and farmers are beginning to recognise the need to look more holistically at GHG emissions across the farm and to reward the protection of carbon stocks, including grasslands, woods, wetlands and peat. The advice that Ricardo can offer is therefore increasingly crucial in improving the environmental footprint of agriculture at the same time as maintaining our precious terrestrial carbon stocks.





# Helping UK water towards zero carbon

Aided by Ricardo expertise and consulting support, UK water companies have set an ambitious target of achieving Net Zero carbon emissions by 2030 – while also delivering on medium-term goals of improved customer service and affordability, long-term planning, and operational resilience.





**W**ith its many and varied processes from capture and storage to purification, distribution and treatment, the water industry is a significant consumer of energy. According to industry body Water UK, the industry is the country's fourth most energy intensive, responsible for around five million tonnes of greenhouse gas ('GHG') emissions annually.

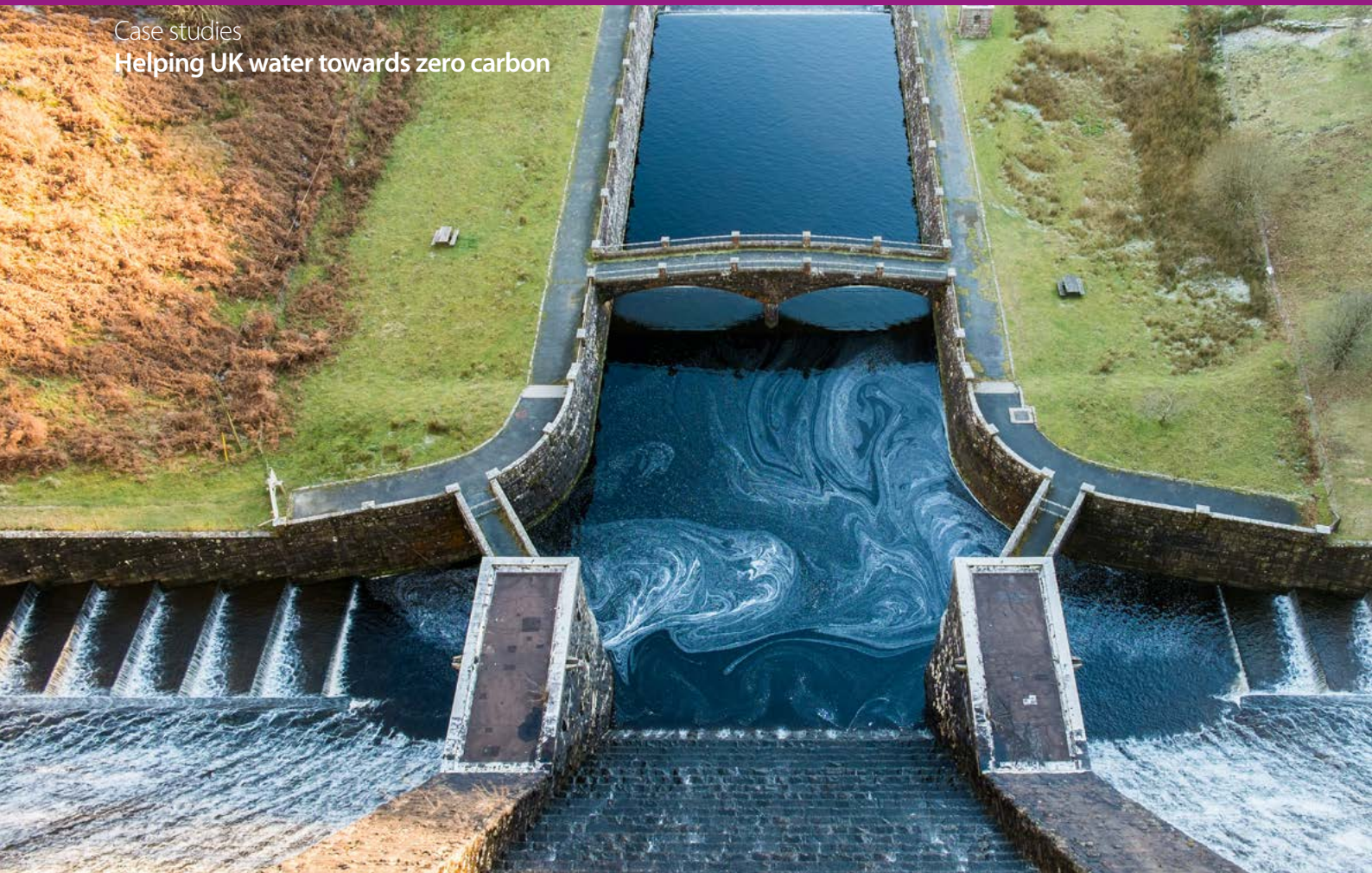
Despite this significant consumption of energy, water is the first industrial sector in the UK (and one of the first major sectors globally) to commit to a Net Zero carbon future by 2030. The goal forms part of the industry's Public Interest Commitment document released earlier this year. It is one of a suite of pledges that stretch the sector's social and environmental ambitions:

to triple the rate of leakage reduction; to improve household affordability of water and sewage services; to prevent 4 bn plastic bottles ending up as waste by 2030; and to be the first industrial sector to achieve a full commitment to the social mobility pledge.

In pursuing its Net Zero carbon ambition, Water UK is working with consultants to develop a comprehensive action plan detailing the measures that the industry needs to deploy over the next decade. Those consultants include Ricardo and UK Water Industry Research, the body responsible for facilitating the shaping of the water industry's research agenda.

In the first phase of the project, which ran from December 2019 to March 2020, Ricardo focused on the development of a scoping exercise to define the baseline and parameters of the





study and to make projections as to how the water industry in the UK could deliver on its 2030 Net Zero carbon ambition.

The project has now moved into its second phase, in which the Ricardo team is building a set of tools and methodologies to help water companies design and test their own route-maps that will enable the transition towards Net Zero carbon emissions. This will enable each water company – and the industry as a whole – to create, model and evaluate different potential pathways towards the achievement of this goal.

The initial focus for the route-maps will be on improvements within the existing water systems and infrastructure, with the aim of reducing and optimising demand. After this, the project will consider the potential application of new technologies and evaluate the impact those could have. An analysis and assessment of costs and benefits will also be included.

By making use of a framework that can be used to assess a range of alternative strategies, the industry will be able to evaluate the alternative pathways that look the most promising

in attaining its 2030 Net Zero carbon emissions target. Water UK will thus be able to develop a strategy for the industry to meet this challenge, and intends to share the lessons it learns from this research. In this way, other major energy-consuming industries will be helped by the efforts of Ricardo and its research partners in delivering on their own sectors' Net Zero ambitions.

### Medium-term strategic resilience

In addition to assisting Water UK with strategic modelling and planning for its 2030 Net Zero ambition, Ricardo is also assisting a number of other water companies with medium-term resilience initiatives.

The strategic agenda for the water industry in England and Wales is defined by the economic regulator, Ofwat, in its five-year asset management plan ('AMP') control periods. In advance of each AMP period, and based on the strategic priorities set by government, Ofwat sets out the methodology to be applied in reviewing and evaluating each water company's investment and operational business plans.

Key criteria for each control period are defined, and the extent to which each company is able to deliver on these is reflected in the so-called 'K' factor percentage they are allocated. This forms part of the 'price review' which takes place a year ahead of the start of the control period; the review defines the allowable annual price increase to be charged to the company's consumers as 'K' plus the Retail Price Index. For this reason, delivery of the goals of the AMP is commercially critical for the water companies.

For the seventh control period ('AMP7'), which runs from 2020 to 2025, key themes of focus include customer service and affordability, long-term financial, corporate and operational



Ricardo support key stakeholders from across the water sector with Net Zero workshop





Ricardo water experts participating in practical safety training



Ricardo water specialists conducting site based analysis

resilience, and innovation. Ensuring companies can meet future water demands is a key area of investment, with almost £470m allocated in England alone for planning of future strategic integration of resources between regions. In addition, there is funding for schemes within each water company region.

Since December 2019 Ricardo has secured framework agreements with many of the largest water companies to support them in planning the long-term future for sustainable water resources. Under the terms of these flexible agreements, the water companies can draw upon a wide range of Ricardo services, technologies and expertise as they strive to deliver the outcomes agreed with Ofwat under AMP7. Water companies signed up include Southern Water, United Utilities, Dŵr Cymru/Welsh Water, Yorkshire Water, Thames Water and Bristol Water. Ricardo's expertise in delivering services under these framework agreements focuses on initiatives and projects such as strategic

environmental assessments, terrestrial and aquatic ecology surveys, habitats regulations assessments and water framework directive assessments.

Ricardo has already begun work across a number of the new framework agreements. Even under the lockdown conditions following the outbreak of the COVID-19 pandemic in the first half of 2020, the company's experts were able to provide support to maintain critical

water infrastructure resilience, including ensuring the continued progress of a decade-long infrastructure project.

### Delivering today's goals and tomorrow's strategic ambition

Ricardo's water practice is increasingly recognised for its expertise in planning and overseeing the most complex and sensitive water and environmental projects, whether for the five-year cycles of the UK AMP periods or in pursuit of the longer-term ambitions of the industry over the coming decade. The Ricardo team's skills are being called upon by an increasing number and range of clients within the public and private sectors, including industry bodies, central and local government, water companies, developers, infrastructure operators and other commercial organisations, in the UK and internationally.





# Supporting Europe's largest ever rail re-signalling project

Over the past decade, and with the support of Ricardo in crucial certification roles, Denmark has been engaged in an ambitious country-wide rail re-signalling programme. Its mission: to eliminate the frustration to operators and the travelling public that patchwork upgrades can cause.





**T**he Danish nationwide railway re-signalling programme is the largest of its kind that Europe has ever seen. Initiated in 2008, the project is seeing the replacement of a traditional lineside signal system which dates back over 50 years and includes some assets that are in excess of 100 years old. Banedanmark, the state-owned company under the Danish Ministry of Transport with responsibility for the maintenance and traffic control for much of the national network, put forward a compelling case to the national government showing how the optimum long-term solution was not the traditional 'patch-up and fix' approach used by many existing railways across the world, but instead the replacement of the entire system in one programme.

On behalf of Banedanmark, Ricardo Certification is performing

assurance roles on the migration to both ERTMS and CBTC systems, including Assessment Body ('AsBo') and Notified Body ('NoBo') services, as well as acting as the Independent Safety Assessor ('ISA'). In the role of AsBo Ricardo acts as an independent party appointed to assess the safety risk process applied during a project, determining compliance with the 'Common Safety Method on risk evaluation and assessment' ('CSM') regulations; secondly, as the project's NoBo, Ricardo provides conformity assessments of products and subsystems against the relevant requirements of the European Directive on the Interoperability of the Rail System.

And finally, as the ISA, Ricardo can assure its customer that their project is meeting recognised industry, legal and regulatory standards. The process also demonstrates that the assessed





business is committed to operating in a safe, sustainable and efficient manner, sending a reassuring message of transparency to passengers, regulators, investors and employees.

### Nationwide integration

The new nationwide signalling system is being installed to enable the European Train Control System ('ETCS'), the signalling and control component of the European Rail Traffic Management System ('ERTMS'). It will take in more than 3,000 km of mainline routes. ERTMS is a system based on direct radio communications between in-cab driver displays and a central traffic control centre. It is a standard backed by the European Union so that the industry can harmonise systems and practices across EU mainline routes, and ultimately establish a single, open European rail network.

A key difference between ERTMS and traditional systems is that by using control centres to monitor and instruct the movements of individual trains, ERTMS allows for the removal of some of the trackside signalling equipment that is a major cause of maintenance costs and operational delays. Another benefit is that trains will be able to operate across borders without the array of on-board train protection systems, radios and signalling equipment required today. By incorporating technology similar to GPS, ERTMS will begin to enable control centres to monitor with pinpoint accuracy each train's location, allowing trains to run closer together, and even bi-directionally along certain routes, thus increasing capacity.

All new mainline projects in the EU must now apply ERTMS signalling, and Denmark is the first member state that has committed to ERTMS on a national scale in a single programme. This is a decision that offers a number of advantages. Firstly, it provides a wider choice, and thus increased competition, between signalling technology suppliers all working to the same technical specifications. Equipment and interface problems between components are also likely to be reduced, because a single supplier can be tasked with delivering a full signalling package. Costs will be further reduced, too, as only a single safety approval is necessary per contract. Finally, design and development costs will now represent a comparatively low proportion of the investment. The operational benefits will be a network that can offer increased line speeds, improved safety,



better reliability and higher traffic levels on key routes.

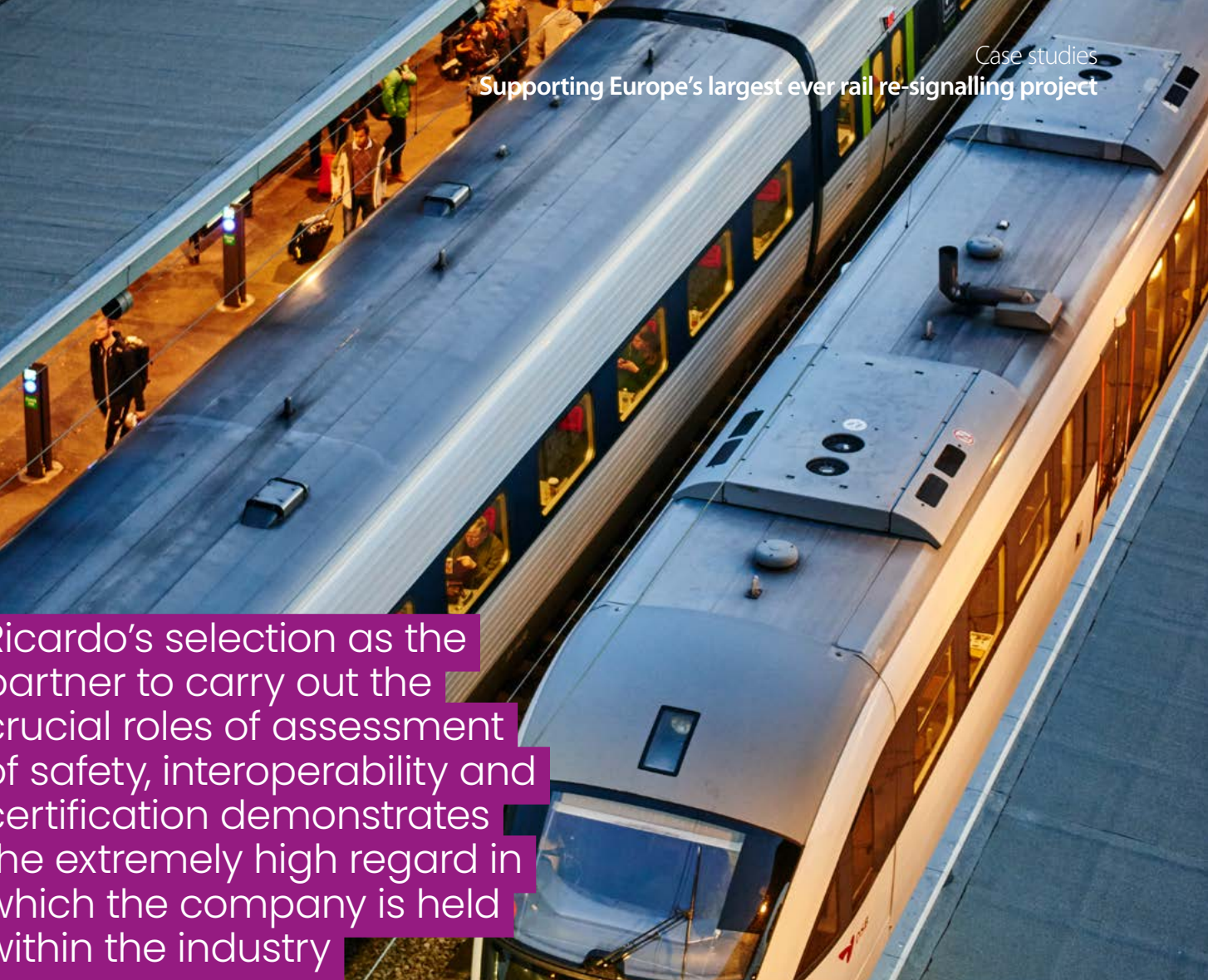
In addition to the use of ERTMS signalling on the country's mainline routes, the metro-based Communications-Based Train Control ('CBTC') system is being introduced on Copenhagen's 170 km suburban network: this is a technology standard designed for the stop-start nature of urban metro systems and allows services to operate at greater speeds and increased frequencies, and with reduced energy costs.

### Parallel electrification

Despite the delays to be expected on such a major project – no other railway has attempted such a wholesale transition before – the programme has now hit its stride. The challenge has been compounded by the complication that the nationwide re-signalling project has also had to progress alongside Denmark's plans to electrify its mainline routes, requiring the procurement of new electric rolling stock, too. The multiple interfaces that are affected when migrating from diesel to electric vehicles, as well as to new a signalling system, have only added to this complexity.

However, feedback from the early deployment lines has been positive, with performance generally exceeding expectations. The team of assessors based in Ricardo Certification's Copenhagen office are confident that the experience accumulated during the commissioning of early deployment lines means that the rollout of remaining routes will progress smoothly. Two such early deployment lines entered service in 2019, followed in early 2020 by the first rollout line for the western region. An additional rollout line in the east is due to





Ricardo's selection as the partner to carry out the crucial roles of assessment of safety, interoperability and certification demonstrates the extremely high regard in which the company is held within the industry



commission shortly, and further routes are scheduled to open at six-month intervals.

When supporting a programme that will eventually last more than two decades, a level of continuity in terms of both approach and personnel is essential. As such, Ricardo Certification has sought to provide a consistent team of assessors working to a clear methodology. Each of Ricardo's lead assessors is supported by a pool of assessors based in Denmark, and also by colleagues in Sweden, the UK, Spain and the Netherlands, ensuring access to the right expertise whenever required.

Regular meetings between the approvals teams enable the project leads to compare notes, discuss issues under

investigation and ensure consistency. Lead assessors also liaise closely with the project safety managers to anticipate upcoming assessment priorities. The use of online tools such as Microsoft Teams was embraced at an early stage to help participants operate as an integrated team across many locations – something that has been particularly helpful during the COVID-19 lockdown.

### **A network for the future**

Both the re-signalling and electrification works are expected to be complete by 2028 to 2030. At that point Denmark will boast a network to rival any new-build: cleaner, more efficient and better able to support higher speeds, with shorter times between trains, reduced service delays and improved safety standards. It will also ensure full interoperability in accordance with European standards.

This project, with its unprecedented national scale, represents a world-class challenge for the railway industry, integrating the latest signalling, control and safety technologies for metro, regional and high-speed lines. With both the international railway industry and city authorities and governments investing in ambitious world-class infrastructure projects that promise to have a transformative and highly beneficial effect on the conurbations that they serve, Ricardo's selection as the partner to carry out the crucial roles of assessment of safety, interoperability and certification demonstrates the extremely high regard in which the company is held within the industry.





# Enabling high-capacity electric vehicle charging

Ricardo is participating in a research project, DC Share, that will demonstrate the use of local DC networks to leverage spare capacity across existing AC electricity distribution substations and enable the connection of increased numbers of high-power electric vehicle charging points – all without the need for significant and costly distribution network reinforcement.





**T**he ability of power distribution networks to accommodate a significant growth in demand arising from the need to recharge electric vehicles (EVs) is likely to be a key enabler for the decarbonisation of transport, a stated aspiration of governments around the world.

In the UK, for example, regulations have already been put in place that will end the sale of new conventional gasoline and diesel-powered cars and vans by the year 2040 or earlier. As a means of facilitating this transition, the UK Government's Clean Growth Strategy sets out the importance of accelerating the shift to low-carbon transport: one of its key stated objectives is to "develop one of the best EV charging networks in the world."

The significance of this aim is underscored by the fact that,

by itself, home-based charging cannot possibly match the convenience enjoyed by today's petrol and diesel drivers, who can refuel their vehicles at will in a matter of a few minutes at multiple filling station locations. More chargers are needed if range anxiety is to be dispelled and drivers encouraged to switch to an EV; likewise, for EVs to offer practical solutions for the operators of vehicle fleets such as delivery vans and taxis, a much greater provision of rapid charging facilities will be required. These will need to be in short-stay destinations such as town centres, as well as at taxi ranks and in commercial vehicle and car-club charging hubs. Moreover, significant additional provision will be needed for on-street charging for the approximately 40 percent of people in the UK lacking access to home-based charging because they do not have off-street parking.



### Distribution network capacity constraints

Arguably the biggest challenge for the power industry in accommodating an increasingly electrified vehicle parc lies in the capacity constraints of the medium voltage (up to 36 kV) and low voltage (up to 1 kV) distribution networks. Whereas at grid scale additional capacity can be provided through focused investments such as new power stations and renewable schemes like offshore wind farms, the low-voltage distribution networks represent a highly complex and geographically dispersed mix of infrastructure installed over many decades.

Previous research has shown that within the UK, the low-voltage distribution network should be able to accommodate large-scale EV charging at up to 7 kW through the use of managed charging solutions, such as focusing vehicle recharging demand throughout the night and during off-peak hours. A more fundamental challenge occurs, however, if more rapid 50-150 kW charging (which would give users the flexibility to recharge in minutes rather than hours) is to be considered at any scale in urban environments.

The level of power required for one such rapid charger uses a large percentage of both a typical secondary transformer and AC cable load capacity. As such, while any given distribution substation might be able to connect one or two rapid chargers, as soon as such facilities are required at any scale, reinforcement of the low-voltage network is likely to be necessary.

The wholesale upgrade of this infrastructure to accommodate the required change in vehicle use is neither commercially



feasible nor practical as a solution. Moreover, capacity is not likely to be constrained universally across the network and will tend to vary dramatically over time with the patterns of the day and working week. Enabling the rapid charging of EVs within the constraints of existing infrastructure is the challenge that the DC Share project, in which Ricardo is partnering with Western Power Distribution and Electricity North West Limited, seeks to address.

This approach enables uncertainty in demand to be managed more effectively, optimizing power flows in real time to react as needed





### DC Share – a radically new approach

With funding awarded by the UK energy market regulator Ofgem (the Office of Gas and Electricity Markets) through the Network Innovation Competition Project, DC Share will demonstrate the use of latent capacity in distribution network: capacity which is difficult to access using traditional means. The project will adopt a novel approach to supplying rapid charging hubs, using power electronics to channel power from existing substations and distributing this to rapid EV charge points via a new high-capacity DC cable network.

Using this approach, transformers experiencing heavy demand can receive support from those that are more lightly loaded, thus enabling uncertainty in demand to be managed more effectively and optimising power flows in real time to react as needed. Enabled via fibre-optic communication infrastructure installed with the DC cables, the DC Share solution provides a means of sharing system capacity across secondary substations with different load profiles. The demonstration will comprise four such substations to which around 20 rapid EV chargers can be connected.

In addition to the promise of improved distribution network capacity utilisation, the approach envisaged by DC Share will leave spare capacity on existing low-voltage AC feeder cables to customers' premises. This is important to provide for likely future demand growth associated with the existing connections – for example, to supply further off-street EV charging or for domestic heat pumps.

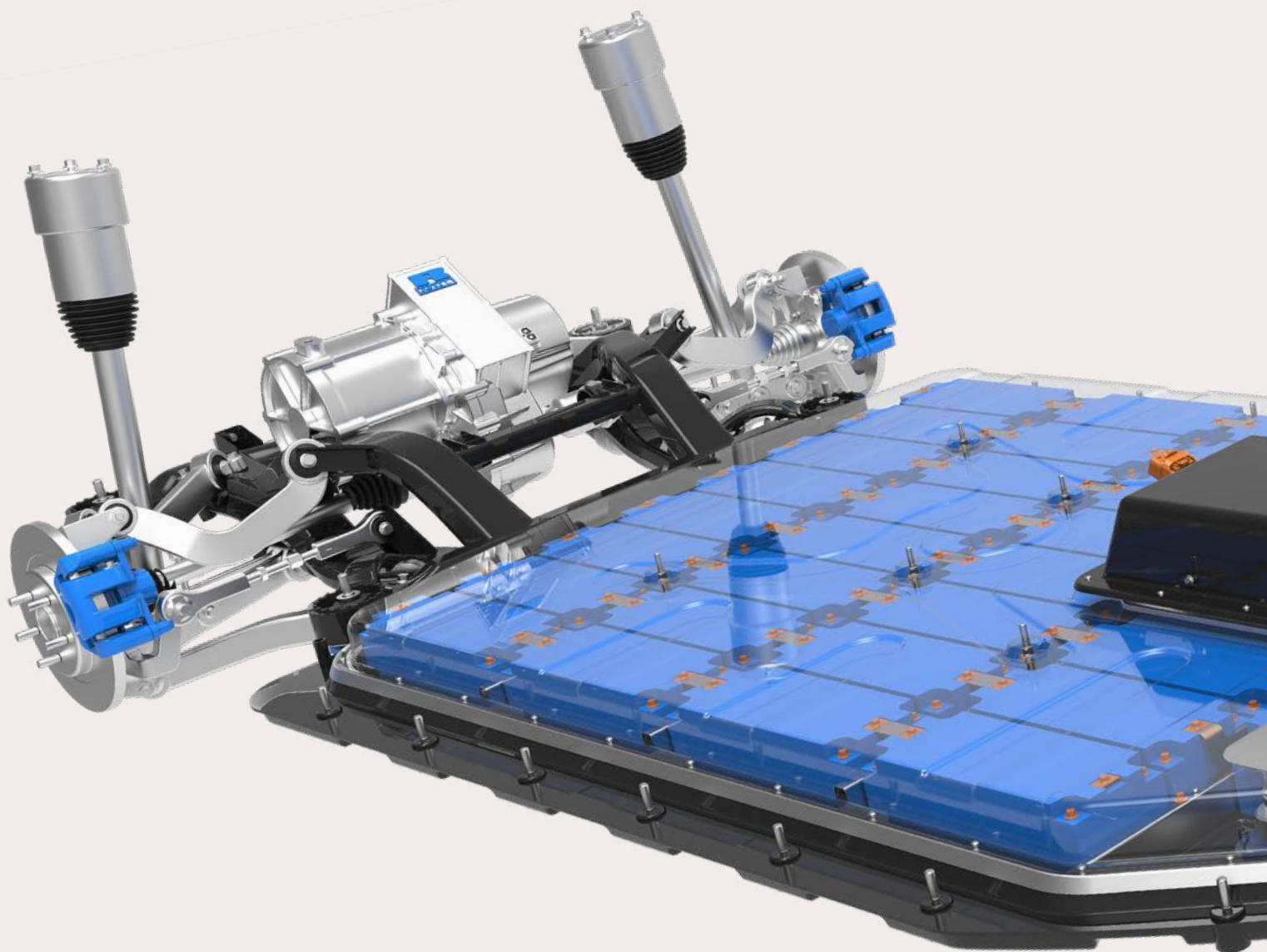
Since the DC Share project commenced in January 2020, Ricardo and its partners have researched and identified a

suitable site to accommodate the technology demonstration and are addressing technical issues and concluding designs prior to defining the necessary procurement packages. Discussions are also being progressed with commercial charge-point operators with a view to the possible integration of the DC Share project rapid chargers into a viable commercial network following project completion. Despite the effects of the COVID-19 pandemic, the DC Share project remains on track for the demonstration site to be commissioned by June 2022, with the results of testing then being evaluated over the subsequent year.

### A holistic perspective of the power system

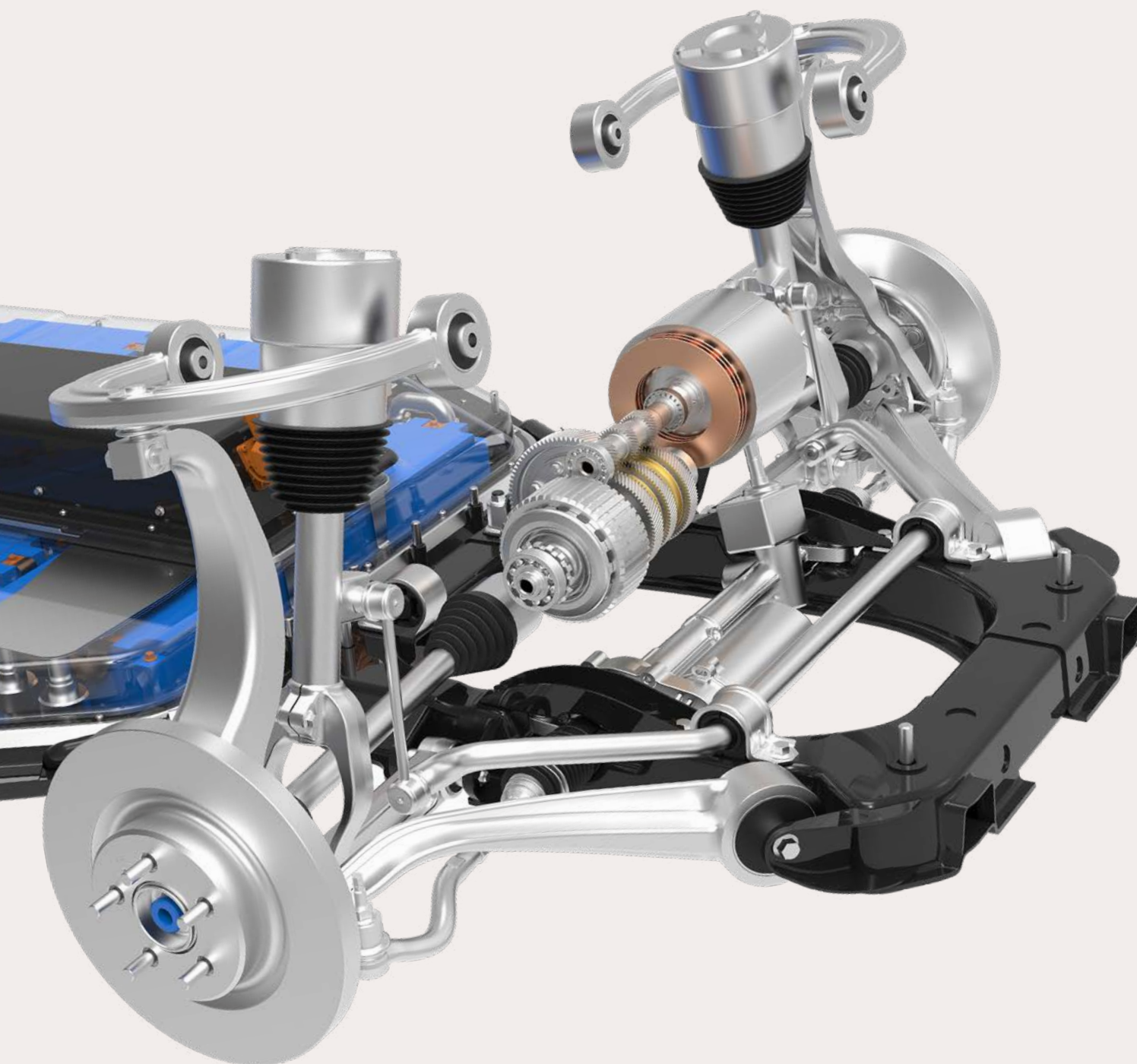
The DC Share project demonstrates the urgent need for innovation in the power network to work alongside the other incentives that will deliver new electrified vehicles to market. The car drivers and light-vehicle fleet operators of the future will need to know that when switching to EVs they can experience a convenience of transportation that is at least as flexible as that offered by the conventional vehicles of today. The widespread and public availability of destination-based rapid charging is thus an essential element of the future low-carbon transport ecosystem, and this can only be realised through a fresh perspective on the distribution network. With its unique insights into both the automotive and power industries, the DC Share project is a further demonstration of the crucial role that Ricardo is able to play in making this low-carbon future a reality.





# Ending range anxiety for electric-vehicle drivers

Maximising range is the top priority for developers of electric vehicles, and demands the best possible powertrain efficiency from battery to wheels. Ricardo engineers are achieving significant efficiency gains through an integrated approach to electric powertrain design, including a focus on the highly complex subject of electrified vehicle thermal management.



**W**ith electric vehicle (EV) buyers becoming more cash conscious, the recipe for greater range is no longer just to add bigger, heavier and costlier battery packs. Instead, EV buyers will now be able to get the range they need by choosing models with higher powertrain efficiency to help make the most of every kilowatt-hour in the battery.

A key factor here is the efficient thermal management of the whole suite of xEV systems – ‘x’ standing for all types of electrified vehicle, from pure battery electric vehicles to plug-in hybrids and range-extended EVs. As well as boosting range, good thermal management can significantly improve passenger comfort, charging performance, battery durability and the

predictability of the increased range. This last point is important because range anxiety and the difficulty of predicting available driving distance over different routes and in different weather conditions is still a big concern for many potential EV buyers.

Ricardo’s Integrated Thermal Management approach to the design of xEV systems focuses not just on the powertrain, but on the whole vehicle system including the cabin. The key to this is the Ricardo Integrated Model-based Development Framework (‘IMBD’) which takes into account all onboard systems and the impact they have as a whole on the vehicle’s total energy resources.

### How the process works

Under the IMBD umbrella and using a number of tools including



## Ending range anxiety for electric-vehicle drivers

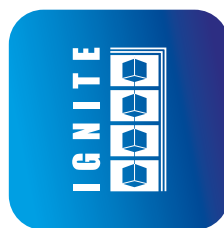
Ricardo's IGNITE software, the powertrain (motor, power electronics and battery), and HVAC (cabin and heating and cooling systems) are first defined as a model sub-system and their parameters established.

The next step is to create a 1D base model of the thermal system model including the powertrain and vehicle. Known as a plant model, it includes the cooling circuits, HVAC and cabin, and the battery and electrical system. Stage three is to generate a manageable Reduced Order Model ('ROM') for the simulation and analysis of driving scenarios. Finally, the ROM is optimised to make it capable of running in, or faster than, real time when integrated into a physical control unit.

### Evaluating different alternatives quickly

This approach makes it possible to evaluate the many different technical alternatives that might be used for a particular task. For example, battery cooling can be accomplished in a number of different ways. Air cooling is one, liquid cooling with cold plates is another, and further options are refrigerant cooling or immersion cooling where electronic components (battery cells/bus bars, MOSFETs, IGBTs, electric motor end windings or stator slots) come into direct contact with a dielectric (non-conductive) coolant.

With the introduction of super-fast chargers now bringing rates of up to 350 kW, the thermal management of batteries is becoming increasingly demanding. By using a non-electrically conductive fluid, the coolant can be in direct contact with cell connection tabs and bus bars, massively improving the cooling



capacity and making it possible to charge at much faster rates than would otherwise be possible without risking permanent damage.

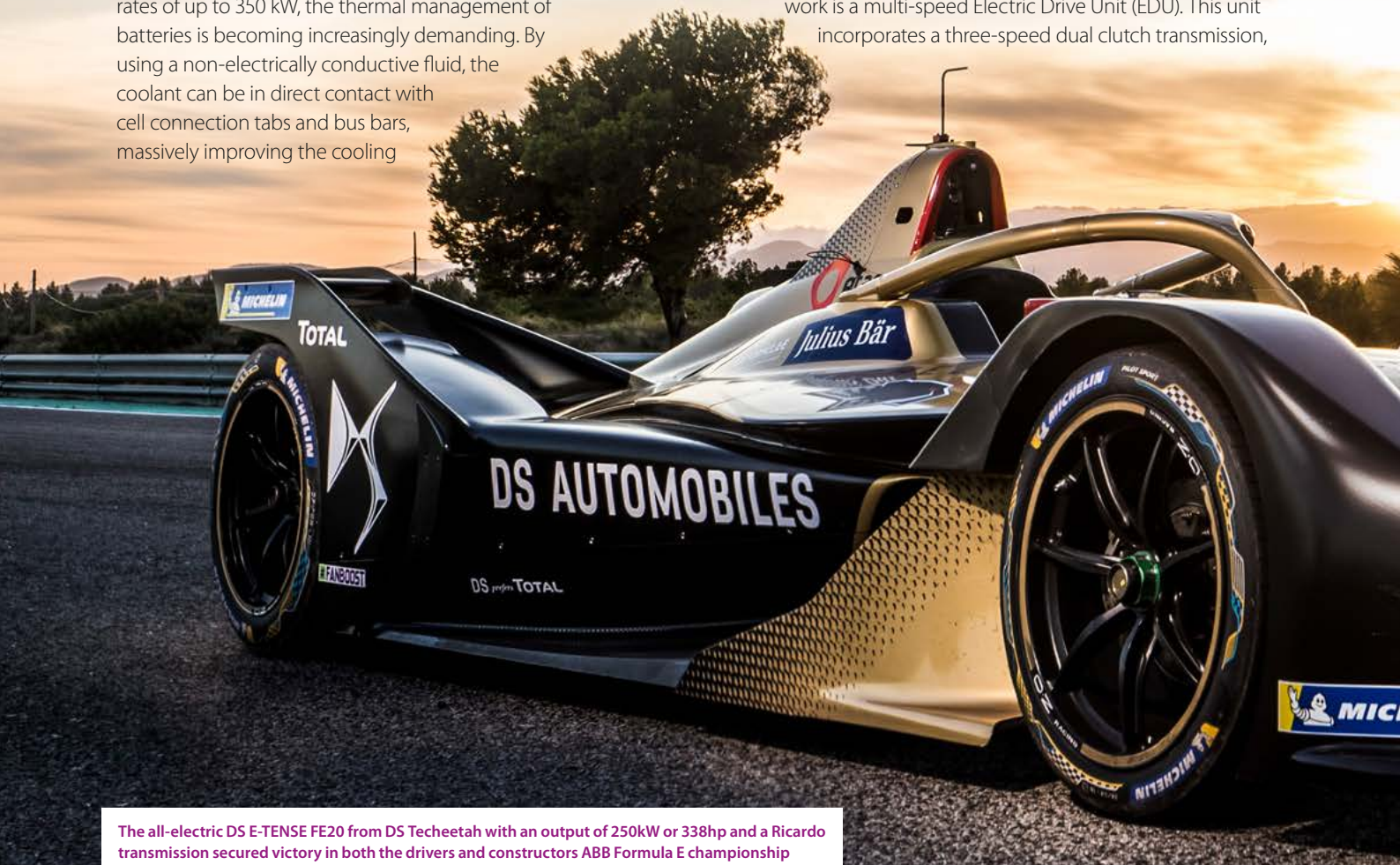
Typical fluids used for this purpose are gearbox transmission oils or cooling oils used in transformers. Although the thermal conductivity of these fluids is lower than that of water-based cooling fluids, the overall cooling benefit is much greater than

the conventional cold plates approach with ethylene-glycol water. Ricardo is collaborating with the manufacturer M&I on the development of these new fluids as part of an Innovate UK-funded project called I-CoBAT (Immersion-cooled Battery), which started in June 2019 and will finish at the end of 2020.

Taking into account all improvements to the powertrain and cabin heating and cooling systems, Ricardo estimates IMBD can deliver a remarkable 10 to 15% gain in the overall energy efficiency of the vehicle. What is more, work in this area is already moving beyond the automotive sector and expanding into marine, rail and aviation applications.

### Integrated electric drive units

Combining an EV's electric motor with the transmission and power electronics to make a single unit is an effective way to improve efficiency and reduce cost. Concepts of this type could be used by EV manufacturers across a range of EV classes – and an optimum solution that has emerged from Ricardo's work is a multi-speed Electric Drive Unit (EDU). This unit incorporates a three-speed dual clutch transmission,



The all-electric DS E-TENSE FE20 from DS Techeetah with an output of 250kW or 338hp and a Ricardo transmission secured victory in both the drivers and constructors ABB Formula E championship



## Ending range anxiety for electric-vehicle drivers

an electric machine, a final drive and an inverter, and is intended for application in a mid-sized, two-wheel drive SUV.

This technology is scalable, too, with the number of transmission speeds chosen for a given application depending on factors such as efficiency, cost, packaging, and inverter, motor and other vehicle attributes. In most applications the decision will be driven by the cost versus efficiency balance – for example, the fact that cost can be taken out of the battery by increasing range through driveline efficiency.

### Formula E racing

In competitive electrified motorsport, Ricardo has many years' experience working with world-leading Formula E teams including DS Performance. The DS Techeetah racing team won both the manufacturers' and drivers' championships in the 2018-2019 season and was leading the 2019-2020 season before the competition was paused due to the COVID-19 pandemic. In Formula E, grid regulations require that much of each car is common. Significant competitive advantage can be gained with a highly efficient powertrain, however, and the transmission plays a vital part in this. In this case, the transmission was designed by Ricardo and DS Performance in partnership.

Using software it had developed in house, Ricardo was able to predict the overall efficiency of the transmission, minimising oil churn, seal drag,

bearing drag and other parasitic losses to develop the most efficient transmission possible. The software is so accurate that it is possible to predict differences smaller than 0.1% – and because there is a direct correlation between overall driveline efficiency and lap time, any reduction of losses in the driveline improves the performance of the car. The very important lessons learned in this demanding field are expected to contribute directly to road car development.

### Electric future

Ricardo is continuing its research into producing high-efficiency and cost-effective electric powertrains capable of underpinning future xEV products as well as fuel cell electric vehicles. What is clear from the work so far is that treating the powertrain as single system rather than a collection of separate components, and optimising thermal as well as mechanical systems in an integrated manner, gives significant efficiency gains. And the best thing is that there are many more gains still to come.

The software is so accurate that it is possible to predict differences smaller than 0.1%







# New model army

Ricardo's engineers are at the forefront of delivering safe, flexible, robust and cost-efficient defence vehicle technology – everything from reimagining Europe's best-selling commercial pick-up as a general service vehicle concept, to assisting General Motors ('GM') with integrated product support for prototypes of the U.S. Army's future Infantry Squad Vehicle, and delivering crucial safety technology for the workhorse HMMWV 'Hummvee'.



The US Army awarded GM Defense and its strategic partner, Ricardo Defense, a USD 214.3M contract to build, field, and sustain the Army's new Infantry Squad Vehicle

**M**anufactured in Ford's South African facility and sold globally, the Ranger is a common sight on the highways of Europe. A vital tool of the trade in sectors ranging from construction to agriculture and forestry, the Ranger is the continent's best-selling pick-up and is also valued for its versatility, durability and high towing capacity in leisure applications.

However, while the model is familiar in many differing roles, it has not – until now, at least – been seen as a candidate for military service. In response to a request from Ford, Ricardo engineers created a Ranger military general service vehicle concept. Building on the wealth of experience of the company's special vehicles team, this latest commercial platform adaptation is the most recent embodiment of the Ricardo approach to

cost-effective modern military vehicle design, a heritage that stretches back almost three decades.

The Ricardo Ranger concept is set to be available with a range of powertrain options, including Ford's strong and refined 213 hp 2.0-litre EcoBlue bi-turbo diesel, which produces 500 Nm of torque for excellent load-hauling capability. This is mated to an advanced new 10-speed automatic transmission for easy, economical driving.

Key features of the adaptation designed by Ricardo include options for a rollover protection system similar to that used in the highly successful WMiK vehicle developed by Ricardo for the British Army; an armoured ballistic underfloor and armoured glass; lightweight but heavy-duty front and rear bumpers; skid plates for the radiator, powertrain and fuel



## Case studies

### New model army

tank; rock sliders and improved wading/fording protection; NATO IRR paint/camouflage, and four-point seat harnesses. In addition, the 24V electrical system is enhanced to provide the power requirements and EMC protection expected of modern defence vehicle applications, and the chassis can be equipped with upgraded springs, dampers, brakes, heavy-duty wheels and all-terrain tyres, which combine to offer greater ride height and more versatile towing capacity. In delivering this project, Ricardo has worked closely with Polaris Government and Defense, in particular for support in the areas of onboard power management and C4i (command, control, communications, computers and intelligence) integration.

### Advanced concept support for GM

While the Ricardo-developed Ford Ranger general service vehicle is an example of a very modern platform-adapted concept closely based on a series production vehicle, the U.S. Army's Infantry Squad Vehicle ('ISV') is intended as a more extreme adaptation suitable for more frontline use. The ISV is aimed in particular at providing tactical mobility for airborne troops. Its specification requires it to be sufficiently light in weight that it can be sling-loaded from a UH-60 Blackhawk helicopter, as well as compact enough to fit within a CH-47 Chinook. It needs to be versatile as a ground vehicle, too – able to carry up to nine troops together with their kit, and with a payload capacity of 5,000 lbs (1,866 kg).

In order to fast-track the entry into service of this all-terrain, highly transportable vehicle, the U.S. Army selected three suppliers to develop ISV prototypes for evaluation by service personnel, with the intention of awarding a production and deployment contract later in 2020. One of the chosen suppliers



was GM Defense, which teamed with Ricardo Defense to provide integrated product support. Ricardo's support includes vehicle technical manual and training material development for operators and maintenance personnel. The ISV developed by GM Defense is based on the Chevrolet Colorado ZR2 architecture, which leverages 70% commercial off-the-shelf parts in a flexible, light, all-terrain vehicle.

The Ricardo Ranger general service vehicle concept is based on Ford's highly successful commercial platform





Ricardo has already provided a total of over 4,000 ABS/ESC systems for the U.S. Army's HMMWVs, and has begun shipments directly to allied foreign countries that also use the vehicle



### Enhanced safety for the 'Humvee'

The High Mobility Multipurpose Wheeled Vehicle ('HMMWV') or 'Humvee' is a core element of the U.S. Army's vehicle fleet and one that is planned to remain in service well into the 2030s. In order to improve the safety, serviceability and agility of this important military vehicle, Ricardo embarked on a project in 2014 to modify a fleet of ten HMMWVs belonging to the Michigan National Guard, installing a Ricardo-engineered ABS and ESC system that would significantly improve occupant safety.

The Ricardo system was developed, in part, in response to a National Highway Traffic Safety Administration ('NHTSA') report conducted in 2014 that discovered a 74% reduction in vehicle rollovers for similar light trucks and vehicles if ABS/ESC had been fitted. In 2011 NHTSA mandated ABS and ESC systems on all passenger vehicles sold in the US. The Ricardo system is the first of its kind to uniquely adapt the same commercial automotive components cited in the NHSTA report to improve HMMWV handling and vehicle stability. Moreover, the system also provides shorter, safer stopping distances, a significant reduction in the wear and replacement cost of brake system components, and increased reliability and hence operational readiness. The inclusion by the US Congress of the 'HMMWV Rollover Mitigation program' as a priority in the 2021 defence budget validates the important contribution to vehicle safety that this Ricardo-engineered system offers.

The complete package developed and tested by Ricardo for the HMMWV includes anti-lock braking, electronic stability control, active rollover protection, traction control, and improved brake calipers, pads and rotors. The entire system leverages proven components in a package that Ricardo engineered specifically for the arduous requirements of the military environment; the whole programme was designed for ease of retrofit upgrade to the existing fleet.

A significant milestone in the take-up of the Ricardo ABS/ESC kit was the assignment of a National Stock Number, which enables the US government, its agencies and the Army to place

direct orders for the Ricardo retrofit system. To date, a total of over 4,000 Ricardo ABS/ESC systems have been provided, improving the safety and manoeuvrability of this staple vehicle of the U.S. Army.

In addition to supplying the ABS/ESC retrofit kit to the U.S. Army, Ricardo has also begun shipments directly to allied foreign countries that deploy the HMMWV as part of their ground force operations. To support the increasing supply chain requirements that result from this success, Ricardo Defense has expanded its kit production facility to include a new location in Sterling Heights, Michigan.

### Global technology partner

The programmes described above build upon Ricardo's long-standing and well-deserved reputation for the delivery of high-quality, cost-effective vehicles and technology integration for the world's armed forces. In previous years Ricardo has been responsible for programmes such as the design and construction of a fleet of WMIK light-reconnaissance multi-role Land Rovers and the crew-protected Foxhound vehicle, both of which are in successful ongoing use by the British Army. Today, Ricardo's capabilities extend well beyond mobility, with the company increasingly seen as the partner of choice for a wide range of software, technical services and practical solutions that help to protect lives, reduce costs, and minimise waste, both for the forces of NATO countries and for other allied nations worldwide.







# Corporate governance

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**Dave Shemmans**



**Sir Terry Morgan**



**Ian Gibson**



**Mark Garrett**



**Patricia Ryan**

## Board of Directors

as at 30 June 2020

### Dave Shemmans

*BEng*

**Chief Executive Officer**

Dave Shemmans joined Ricardo in 1999 and was appointed Chief Executive Officer on 4 November 2005. Prior to joining Ricardo, he was managing director of a subsidiary of Powergen plc. He has also gained consulting experience in both listed and private companies. He is a graduate of the Harvard Business School. Dave was appointed non-executive director of Sutton and East Surrey Water plc on 1 September 2014.

### Sir Terry Morgan

*CBE, FREng*

**Non-Executive Director and Chair of the Board**

Sir Terry Morgan was appointed Non-Executive Director on 2 January 2014 and Chair on 29 October 2014. He was previously non-executive Chair of Crossrail Limited, High Speed Two (HS2) Limited, The Manufacturing Technology Centre Limited and NSARE Limited (the National Skills Academy for Railway Engineering). Sir Terry was also previously a non-executive director of Boxwood Limited and the Department of Energy & Climate Change.

### Ian Gibson

*BSc, ACA*

**Chief Financial Officer**

Ian Gibson was appointed Chief Financial Officer on 1 July 2013. A member of the Institute of Chartered Accountants in England and Wales, Ian is a finance professional with more than 30 years of commercial experience. He was previously Chief Financial Officer of Cable & Wireless Worldwide plc, where he spent a total of 17 years in a number of senior financial management positions. Prior to this, Ian spent 12 years at Deloitte where he worked in both the London and Toronto offices.

### Mark Garrett

*CEng, FIMechE, FREng*

**Chief Strategy Officer**

Mark Garrett joined Ricardo in 1998 and resigned on 31 July 2020.

### Patricia Ryan

*LLB (Hons)*

**Group General Counsel and Company Secretary**

Patricia Ryan is a qualified solicitor. She joined Ricardo's legal department in 2002 and was appointed Group General Counsel in 2005 and Company Secretary in November 2008. Patricia holds an honours degree in law from the University of Westminster. She achieved the Certificate of Investor Relations from the Investor Relations Society in February 2017.



**Laurie Bowen**



**Jack Boyer OBE**



**Russell King**



**Malin Persson**



**Bill Spencer**

### Laurie Bowen

*BSc, MBA*  
**Non-Executive Director, Chair of Nomination Committee**

Laurie Bowen was appointed Non-Executive Director on 1 July 2015. She has over 30 years of international leadership experience at IBM, British Telecom, Tata Group, Telecom Italia Sparkle and Cable & Wireless Communications. She was appointed non-executive director of Chemring Group plc on 1 August 2019. Laurie has an MBA, a BSc in Electrical Engineering and a BSc in Computer Science from Washington University in St. Louis, Missouri.

### Jack Boyer OBE

*OBE, BA (Hons), MSc, MBA*  
**Non-Executive Director**

Jack Boyer OBE was appointed Non-Executive Director on 5 September 2019. Jack is a non-executive director and Senior Independent Director of TT Electronics plc where he is a member of the Audit, Remuneration and Nominations committees. He chairs the Board of Trustees of the University of Bristol and is a non-executive director of the Henry Royce Institute for Advanced Materials. He recently chaired AIM listed company Seeing Machines and was previously a non-executive director at FTSE 250 companies Mitie plc and Laird plc after a background in engineering and biosciences. He was until recently a board member of the Engineering and Physical Sciences Research Council and co-chaired the Advanced Materials Leadership Council at the department for Business, Energy and Industrial Strategy. Jack was awarded an OBE in 2015 for services to Science and Engineering.

### Russell King

**Non-Executive Director, Chair of the Remuneration Committee**

Russell King was appointed Non-Executive Director on 5 September 2019. Russell is Chair of Hummingbird Resources plc, and an independent non-executive director of BDO LLP. Russell served as Chief Strategy Officer at Anglo American plc where he had global responsibility for strategy, business development, government relations, safety and sustainable development. He was also a member of its executive committee for eight years. Additionally, Russell was senior independent director and remuneration committee chair of Spectris plc from 2010 to 2020 senior independent non-executive director and remuneration committee chair of Aggreko plc, from 2007 to 2017.

### Malin Persson

*MSc*  
**Non-Executive Director, Senior Independent Director**

Malin Persson was appointed Non-Executive Director on 4 January 2016. Malin held a number of senior executive roles during her employment by the Volvo Group between 1995 and 2012. She is an elected member of the Royal Swedish Academy of Engineering Sciences and has an MSc in Industrial Engineering and Management from the Chalmers University of Technology in Gothenburg.

### Bill Spencer

*BSc, FCMA, MCT*  
**Non-Executive Director and Chair of the Audit Committee**

Bill Spencer was appointed Non-Executive Director on 24 April 2017 and Chair of the Audit Committee on 8 November 2017. For 15 years until 2010 he was the CFO of Intertek Group plc and has since held audit committee chair roles at UK Mail plc and Exova Group plc. Bill has also been the interim Chair, senior independent director and audit and risk committee Chair of Northgate plc. Bill is non-executive director of The Royal Mint. He is a Chartered Management Accountant and Corporate Treasurer and has a BSc in Management Sciences from the University of Manchester.



# Corporate governance statement



**Sir Terry Morgan**  
Chair

## CHAIR'S OVERVIEW

The Board is committed to ensuring that the highest standards of governance are maintained throughout the Group.

This report sets out the ways in which we comply with good corporate governance principles. It describes how the Board and its Committees work, and also outlines our approach to risk management and internal control.

The Board recognises the importance of considering the Company's responsibilities and duties to both its shareholders and its broader stakeholder group, and this has been at the heart of our culture and decision-making process for many years.

The Board spends time listening to and understanding the views of its key stakeholders. When discussing matters at Board meetings these views form an integral part of its decision-making. In support of the requirements of section 172 of the Companies Act 2006, we set out on pages 16 to 17 together with page 95, how the Board has considered the material issues of the Group's stakeholders and how we have engaged with these stakeholders on these issues. As required by the Code, the Board considers that its Non-Executive Directors, including the Senior Independent Director, have a good level of understanding of the issues and concerns of major shareholders.

## Sir Terry Morgan CBE

### UK Corporate Governance Code

The Board confirms that the Company has complied with the provisions of the UK Corporate Governance Code 2018 ("the Code") throughout the year ended 30 June 2020.

This report described how the Company has applied the principles and provisions set out in the Code during the year and sets out our activities relating to the main sections of the Code:

1. Board Leadership and Company Purpose
2. Division of Responsibilities
3. Composition, Succession and Evaluation
4. Audit, Risk and Internal Control
5. Remuneration

The Code and associated guidance are publicly available on the Corporate Governance and Stewardship page of the Financial Reporting Council's website, <https://www.frc.org.uk/directors/corporate-governance-and-stewardship>.

### SECTION 1: Board Leadership and Company Purpose

The role of the Board is to provide entrepreneurial leadership and we recognise that we are collectively responsible for the long-term success of the Group.

Our values and leadership behaviours are a vital part of our culture to ensure that through our conduct and decision-making we do the right thing for the business and our stakeholders.

The Board recognises that it is accountable to stakeholders for

ensuring that the Group is appropriately managed and achieves its objectives in a way that is supported by the right culture and behaviours.

Our values underpin our purpose and are recognised across the Group as the basis of our culture. The Board sets the strategy for the Group to align with our purpose. It oversees the implementation of that strategy to ensure that the Group is suitably resourced to deliver on its strategic objectives.

The Board holds an annual strategic planning session to support the long-term direction of the Group. At the session, held every November, senior managers present on each of our global business areas to better understand market trends, technology developments, innovation and people strategies as well as culture, diversity and inclusion.

Throughout the year, the Board receives regular updates on these areas to ensure the delivery of strategy in line with our purpose.

We have a formal schedule of matters reserved for our approval which are not delegated to the executive team. These include:

- Strategy;
- Acquisitions and disposals of businesses (above a certain size);
- Annual budgets;
- Capital expenditure (above a certain amount);
- Financial results;
- Overseeing systems of internal control, governance and risk management;
- Dividends; and
- Appointment and removal of Directors and the Company Secretary.

	Board meetings	Committee meetings		
		Audit	Remuneration	Nomination
Number of scheduled meetings in the year	7	3	4	1
Number attended by each member:				
Dave Shemmans	7	-	-	1
Ian Gibson	7	-	-	-
Mark Garrett*	6	-	-	-
Sir Terry Morgan CBE	7	-	4	1
Jack Boyer OBE**	5	3	4	1
Bill Spencer	7	3	4	1
Laurie Bowen	7	3	4	1
Malin Persson	7	3	4	1
Russell King**	6	3	4	1
Peter Gilchrist***	3	2	3	-

\*Mark Garrett resigned from the Board and the Company on 31 July 2020.

\*\*Jack Boyer OBE and Russell King joined the Board on 5 September 2019.

\*\*\*Peter Gilchrist retired from the Board on 14 November 2019.

Our Board has Nomination, Audit and Remuneration Committees and we delegate certain responsibilities to them. These Committees comprise our independent Non-Executive Directors (save for the Nomination Committee, which includes our Chief Executive Officer) and all play a key role in supporting the Board. The full schedule of matters reserved for the Board, together with the written terms of reference for each Committee, are available on our website, [www.ricardo.com](http://www.ricardo.com) or on request from the Company Secretary.

Our Code of Conduct, which defines the standards and behaviours expected of colleagues, is a fundamental part of our culture and supports our values. The Code of Conduct is supported by Group policies and mandatory training, which includes anti-bribery and corruption, whistleblowing and data protection.

In addition, an independent and confidential whistleblowing telephone hotline allows colleagues to raise concerns regarding misconduct and any breaches of the Code of Conduct. The Audit Committee routinely receives reports of any matters raised through the whistleblowing hotline. Updates on any investigations undertaken and any corrective actions are provided to the Board.

### The Board in financial year 2019/20

There are seven scheduled Board meetings per year, and otherwise as required. Details of attendance by Board and Committee members at scheduled meetings are shown in the table above.

If any Director is unable to attend a meeting, they discuss their views and comments with the relevant Chair in advance, so that their position can be represented at the meeting.

Board meetings focus on driving Ricardo's strategy, developing strong leadership, succession planning, reviewing financial business performance, monitoring risks and protecting the strength of our relationships with clients, employees and other stakeholders. The Board has a detailed programme that ensures operational and financial performance, risk, governance, strategy, culture and stakeholder engagement are discussed at the appropriate time.

Our forward planner gives Board members visibility of what is on future agendas for their consideration. A number of the key

matters considered by the Board during the year under review are set out in the table below:

Meeting in FY 2019/20	Significant matters under review
July 2019	<ul style="list-style-type: none"> <li>FY 2019/20 budget approval;</li> <li>Risk management and internal control; and</li> <li>Matters reserved for the Board and Committees' terms of reference</li> </ul>
September 2019	<ul style="list-style-type: none"> <li>Preliminary results and Annual Report;</li> <li>Final dividend; and</li> <li>Annual General Meeting ('AGM')</li> </ul>
November 2019	<ul style="list-style-type: none"> <li>Strategy; and</li> <li>Board objectives</li> </ul>
February 2020	<ul style="list-style-type: none"> <li>Interim results and Interim Report;</li> <li>Interim dividend;</li> <li>Key performance indicators; and</li> <li>Health, safety and environment ('HSE')</li> </ul>
April 2020	<ul style="list-style-type: none"> <li>Treasury and Financing Facilities</li> </ul>
May 2020	<ul style="list-style-type: none"> <li>Human resources and Employee Survey results</li> </ul>
June 2020	<ul style="list-style-type: none"> <li>FY 2020/21 divisional budget presentations</li> <li>Insurance</li> </ul>

In each meeting the Board receives reports from the Chief Executive Officer and the Chief Financial Officer together with reports and updates on health and safety as well as potential acquisition and disposal activities. The Board challenges management to ensure that the flow and quality of information to the Board is of a high standard.

At the beginning of the second half of the year, the Board recognised the potential impact to its global operations of the outbreak of the COVID-19 pandemic and immediately scheduled additional board meetings to enable it to regularly monitor the impact on operations and the actions being taken to protect the health and well-being of employees.

In addition, the Board reviewed the Group's financial facilities and approved the extension of a revolving credit facility with the Group's banks to ensure the liquidity of the business. Since February 2020 the Board has received weekly briefings on the operational status of each of its global businesses, together with an update on health, safety and wellbeing of employees.



## SECTION 2: Division of Responsibilities

The Board is collectively responsible for the long-term success of the Group, ensuring that it operates within a framework of effective controls.

The operations of the Board are underpinned by the collective experience of the Directors and the diverse skills and experience which they possess. This experience ensures that leadership and decision-making are focused and balanced, and approached with independent thought and judgement. Accordingly, decisions are taken for the benefit of the Company as a whole, with due consideration for all stakeholders who may be affected.

There is a clear division of responsibilities between the Chair and the Chief Executive Officer, which is documented, clearly understood and approved by the Board.

### The Chair

Sir Terry Morgan is primarily responsible for leading the Board and ensuring its effectiveness. Sir Terry sets the Board agenda in consultation with the Chief Executive, other Board members and the Company Secretary. Sir Terry promotes effective communication between the Executive and Non-Executive Directors and ensures all Directors effectively contribute to discussions and feel comfortable in engaging in healthy debate and constructive challenge.

Sir Terry ensures all Directors receive accurate, timely and clear information to assist them to make their decisions and ensures appropriately tailored induction programmes are delivered for new Directors.

### Chief Executive Officer

Dave Shemmans has direct responsibility for the Group on a day-to-day basis and is accountable to the Board for the financial and operational performance of the Group. He plays a key role in devising and reviewing Group strategies for discussion and approval by the Board. Dave is tasked with providing regular operational updates to the Board on all matters of significance relating to the Group's business or reputation and for ensuring effective communication with shareholders and other key stakeholders.

Dave Shemmans chairs the Executive Committee, which meets regularly throughout the year. The Executive Committee is primarily responsible for developing and implementing our corporate strategy and policies.

### Senior Independent Director

The responsibilities of the Senior Independent Director are also documented and include the provision of an additional channel of communication between our Chair and the Non-Executive Directors. The Senior Independent Director also provides an additional point of contact for our shareholders should they have concerns that communication through normal channels has failed to resolve, or where such contacts are inappropriate.

The Senior Independent Director meets with the Non-Executive Directors at least annually when leading the Non-Executive Directors appraisal of the performance of the Chair.

Malin Persson was appointed Senior Independent Director at the close of the AGM in November 2020.

### Non-Executive Directors

On 5 September 2019 Jack Boyer OBE and Russell King were appointed to the Board as Non-Executive Directors.

Peter Gilchrist was Chair of the Remuneration Committee and Senior Independent Director until his retirement in November 2019. Russell King was appointed Chair of the Remuneration Committee at the close of the AGM in November 2019.

Bill Spencer has been the Chair of the Audit Committee throughout the year under review.

At the close of the AGM in November 2019, Sir Terry Morgan stood down as Chair of the Nomination Committee and Laurie Bowen was appointed in his place.

On a number of occasions during the year, the Chair met the other Non-Executive Directors without the attendance of the Executive Directors. There were several other occasions during the year when discussions between various Directors took place on an informal basis. In addition to formal Board meetings, the Chair maintains regular contact with the other Directors to discuss specific issues.

The Non-Executive Directors bring insight and experience to the Board. They have responsibility for constructively challenging the strategies proposed by the Executive Directors, scrutinising the performance of management in achieving agreed goals and objectives and play leading roles in the functioning of the Board Committees, bringing an independent view to the discussion. They meet with the Senior Independent Director to review the Chair's performance and other matters.

### Workforce Engagement Director

Malin Persson was designated as the Non-Executive Director responsible for overseeing Workforce Engagement during the year under review. Ricardo has a structured engagement plan with its employees, including Pulse presentations, Town Halls, Works Councils and biennial Group employee surveys together with divisional surveys on a more regular basis. Before COVID-19, Ricardo had designated a number of senior executives who travel extensively and regularly, consulting with employees whilst in overseas territories and providing feedback. However, due to the restrictions imposed by the pandemic, this practice is under review with a view to providing Malin with direct access to employees through the use of video-conferencing facilities and other means of technology.

### Company Secretary

Patricia Ryan is secretary to the Board. Her responsibilities include ensuring the Board has the information, time and resources it needs in order to discharge its duties and function effectively and efficiently.

The Company Secretary advises the Board on all governance matters and facilitates induction programmes for new Directors and provides briefings and guidance on governance, legal and regulatory matters. The appointment and removal of the Company Secretary is a matter reserved for the Board as a whole.

### Time commitment

Regular Board and Committee meetings are scheduled throughout

the year, ensuring that Directors allocate sufficient time to discharge their duties effectively. During the year, the Board held seven scheduled meetings and additional strategy days, which included presentations by senior management on each of the business areas.

In addition to scheduled meetings, the Board held additional meetings to consider the impact of the COVID-19 pandemic on its global operations,

Directors are expected to attend all Board and relevant Committee meetings. The table on page 91 shows the record of attendance at the scheduled Board and Committee meetings.

The nature of the Non-Executive Director role makes it impossible to be specific about the maximum time commitment. However, it is anticipated that at least 20 days per annum after the induction phase are required, plus additional time to devote to preparation ahead of each meeting.

It is recognised that at certain times it may be necessary to convene additional Board, Committee or shareholder meetings. Prior to appointment, the Nomination Committee assesses the commitments of a proposed candidate, including other directorships, to ensure they have sufficient time to devote to the role.

### Conflicts of interest

Directors are required to report actual or potential conflicts of interest to the Board for consideration and, if appropriate, authorisation. If such conflicts exist, Directors excuse themselves from consideration of the relevant matter. The Company maintains a register of authorised conflicts of interest, which is reviewed annually.

Details of the Directors' service contracts and terms of appointment, together with their interests in the Company's shares, are shown in the Directors' remuneration report on pages 102 to 127. If Directors have concerns about the Company or a proposed action which cannot be resolved, it is recorded in the Board minutes.

All Directors have access to the advice of the Company Secretary and, in appropriate circumstances, may obtain independent professional advice at the Company's expense. No such requests were made in FY 2019/20. A Directors' and Officers' Liability Insurance policy is maintained for all Directors and each Director has the benefit of a Deed of Indemnity.

## SECTION 3: Composition, Succession and Evaluation Diversity and inclusion

Our Board sets the tone for inclusion and diversity across the Group and believes it is important to have an appropriate balance of skills, knowledge, experience and diversity on the Board and at senior management level to ensure good decision-making. The Board recognises the need to create conditions that foster talent and encourage all colleagues to achieve their full potential. The Board and Nomination Committee receive regular updates on the progress of diversity initiatives across the Group.

Our Board and Committees are committed to promoting equality of opportunity for all employees and job applicants, free

from all forms of discrimination. Ricardo is an inclusive employer and values diversity of skills, knowledge, background, industry, international experience and gender in its employees and aims to recruit the best person for the role in all its positions across the Group.

Our Nomination Committee appreciates that a diverse range of backgrounds is an important part of succession planning at all levels in the Group. Our Committee continually monitors tenure profile and is very conscious of the need to continue to promote diversity at Board level and throughout the Group. Upon engagement of external search consultants, our Board requires that full account of all aspects of diversity are considered in preparing candidate lists.

The Board recognised that the appointment of our two additional Non-Executive Directors during the year under review had diluted female gender diversity. Careful consideration of this impact was undertaken by the Nomination Committee and the Board before appointment and it was determined that in accordance with our aim to recruit the best person for the role, it was appropriate to appoint Russell King and Jack Boyer OBE as Non-Executive Directors. As part of its determination, the Nomination Committee considered that these appointments should be viewed in relation to its overall responsibility for succession planning of the Board. In addition, the Nomination Committee recommended to the Board that Laurie Bowen and Malin Persson should be appointed to the roles of Chair of the Nomination Committee and Senior Independent Director, respectively, to reflect their contributions and status on the Board. Since the departure of Mark Garrett on 31 July 2020, the composition of the Board has returned to 25% female representation.

The Board remains committed to promotion of diversity at all levels within the Group and will report on this further in future years.

Details of female representation elsewhere within the Group are set out on page 22.

As set out in their biographies on pages 88 to 89, each member of the Board offers a range of core skills and experience that is relevant to the successful operation of the Group, providing a strong independent element to the Board and a solid foundation for good corporate governance, as well as fulfilling the vital role of corporate accountability. The oversight each of the Directors provides is balanced with individuals contributing a broad range of skills, diverse experience and knowledge, demonstrating independence and constructive challenge.

### Non-executive Directors' independence.

The Nomination Committee considers whether each of the Non-Executive Directors is continuing to maintain his or her independence of character and judgement in line with the definition set out in the Code. The Non-Executive Directors met with the Chair without the Executive Directors being present on a number of occasions and, at least annually, Directors meet with the Senior Independent Director to review the Chair's performance and other matters.



## Appointment, induction and development

Non-Executive Directors are initially appointed for a three-year term, with an expectation that they will continue for at least a further three years. Directors are nominated by the Nomination Committee and are subsequently approved by the Board for election or re-election annually by shareholders at the Company's AGM. After three years' service the performance of a Non-Executive Director is rigorously assessed by the Nomination Committee. Any development needs identified are discussed by the Chair with the Non-Executive Director.

All Directors will submit themselves for re-election at the forthcoming AGM in November 2020. Upon appointment, all new Directors receive a comprehensive induction programme over a number of months, which is designed to facilitate their understanding of the business and is tailored to their individual needs. The Chair and the Company Secretary are responsible for delivering the programme covering the Company's core purpose and values, strategy, key areas of the business and corporate governance. The New Director induction programme is delivered through meetings with senior managers across the Group as well as via a number of advisors, attendance at Committee meetings, site visits and access to a library of reference materials. In support of the ongoing development of Directors, technical updates are provided at Board and Committee meetings to ensure that Directors remain up to date with key developments in the business environment.

Directors are encouraged to attend training sessions to ensure their knowledge is up to date on relevant legal, regulatory and financial developments or changes. The Board receives presentations on each of the business areas to understand the market conditions and challenges in the different countries the Group operates in. Directors have spent time individually and collectively exploring specific operational activities in detail through presentations, meetings and site visits, giving them the opportunity to meet with local senior management to gain an insight of the business operations. The Board visits our overseas business functions on a regular basis to gain a greater understanding of the market conditions that the business operates in and to understand the challenges they face. This provides in-depth knowledge for the Directors, enabling them to share their own experiences and challenge the business. Unfortunately, due to the outbreak of COVID-19, the planned Board visit to our operations in the US had to be cancelled during the year under review.

## Board evaluation

The Board undertakes a formal review of its own performance and that of its Committees each year. Following the recommendation of the Nomination Committee, an externally facilitated review was commissioned during the year under consideration and the evaluation was reported back to the Board towards the latter part of the year. Condign Consulting undertook the review and concluded that the Board was strong and effective, with each Director actively contributing to the effectiveness of the Board and the Committees of which he or she was a member during the year.

Following the external review, the Board set itself improvement

actions and objectives, including, amongst other things, gaining a deeper insight into shareholder views and seeking additional engagement; review of the board schedule and agenda planning; further review of diversity goals and workforce engagement; review of strategic priorities and succession planning. The outcome of these improvement actions will be reported in the next annual report.

## SECTION 4: Audit, Risk and Internal Control

This Report provides shareholders with a clear assessment of the Group's position and prospects, supplemented, as required, by other periodic financial and trading statements.

### Audit Committee and auditors

The Board has delegated oversight of the relationship with the Group's and the Company's external auditors to the Audit Committee. Their work is outlined in the Audit Committee report on pages 98 to 101.

### Risk management and internal control

Each year, the Board undertakes a comprehensive review of the principal risks and uncertainties facing the Group and how those risks may impact the Group's prospects.

Overall responsibility for systems of internal control rests with the Board. The Board's arrangements for the application of risk management and internal control principles are detailed on pages 36 to 39.

### Financial and business reporting

The Statement of Directors' Responsibilities for preparing the Annual Report, the Directors' Remuneration Report and the financial statements in accordance with applicable law and regulations are set out on pages 102 to 127, and pages 134 to 199 respectively.

The Group's business model is set out within the Strategic Report on pages 4 to 5.

The Directors' statement relating to going concern and the Viability Statement are set out on pages 130 and 40 to 41, respectively.

## SECTION 5: REMUNERATION

Please refer to the Directors' Remuneration Report on pages 102 to 127 for further information, and in particular:

### Level and components of remuneration

Please refer to pages 103 to 118.

## Procedure

Please refer to pages 119 to 127.

The Non-Executive Directors have never been employees of the Company, nor have they participated in any of the Company's share schemes, pension schemes or bonus arrangements.

The Non-Executive Directors receive no remuneration from the Company other than the Directors' fees disclosed, and travel expenses. Their fees are determined by the Board as a whole on the recommendation of the Chief Executive Officer.

No Director is involved in deciding their own fees.

## Stakeholders

Culture, underpinned by our values, plays a fundamental role in the way that we do business and deliver our strategic goals and KPIs. The Board recognises that having robust governance structures in place is vital to decision-making. The Board spends a lot of time listening to and understanding the views of its key stakeholders. When discussing matters at Board meetings these views form an integral part of its decision-making.

## Clients

Clients are at the heart of what we do. Every decision we take is to ensure we deliver great service to our clients. The Board receives regular feedback from Voice of the Client reports completed by our Clients.

## Staff

The experience and expertise of our colleagues is essential for the delivery of our strategic objectives. Operating within a culture of openness and inclusivity ensures that each of our colleagues is focused on delivering great service.

## Suppliers

Building trusted partnerships with our suppliers is important in enabling us to provide the best service to our clients and provides a great platform for our suppliers to grow.

## Community

The Board is committed to improving sustainability and helping communities thrive by positively contributing both socially and economically. A key consideration of the Board in making its decisions is to balance the sometimes-conflicting needs of our stakeholders to ensure they are all treated consistently and fairly.

## Shareholders

A key objective of the Board is to create value for shareholders and deliver long-term, sustainable growth.

The Chief Executive Officer and the Chief Financial Officer regularly meet with institutional shareholders to foster a mutual understanding of objectives, answer their questions and to keep them updated on our performance and plans.

These meetings range from one-to-one discussions to group presentations and investor conference calls following our results announcements. Any presentations provided in these meetings are uploaded to our website and comments are fed back to us.

In addition, the Senior Independent Director and the Chair

of the Audit Committee are available for discussions with major shareholders, if required.

The Chair also looks to shareholder groups' annual voting guidelines to better understand their policies on governance and voting.

For an independent view, Investec and Liberum, the capital markets advisory firms, provide us with regular reviews of major investors' views on company management and performance. Surveys of shareholder opinion are normally carried out following announcements of results and are circulated to the Board.

As required by the Code, the Board considers that its Non-Executive Directors, including the Senior Independent Director, have a good level of understanding of the issues and concerns of major shareholders.

## Directors' duty under section 172 of Companies Act 2006

In discharging our section 172 duties, Directors are required to have regard, amongst other matters, to: the likely consequences of any decisions in the long term; the interests of the company's employees; the need to foster the company's business relationships with suppliers, customers and others; the impact of the company's operations on the community and environment; the desirability of the company maintaining a reputation for high standards of business conduct; and the need to act fairly as between members of the company. In addition to the above, we also have regard to other factors which we consider relevant to the decision being made. Those factors include the interests and views of Ricardo's pensioners and our relationship with regulators. The Board acknowledges that every decision it makes will not necessarily result in a positive outcome for all of the Group's stakeholders. By considering the Company's purpose and values, together with its strategic priorities and having a process in place for decision-making the Board does, however, aim to make sure that its decisions are consistent and predictable. Details on how the Board operates and the way in which it reaches decisions (including the matters discussed and debated during the year, the key stakeholder considerations that were central to those discussions and the way in which it has had regard to the need to foster the Company's business relationship with customers, suppliers and other stakeholders), are set out on pages 16 to 17.

## Ricardo's Annual General Meeting

The Company's Annual General Meeting is an opportunity to meet private investors. However, due to the outbreak of COVID-19, and the continued uncertainty about its containment and the changing public health guidance and legislation, the Board of Directors have decided to implement changes to safeguard the health of our shareholders and employees.

**The Company's Annual General Meeting will be held at our registered office, Shoreham Technical Centre, Shoreham by Sea, West Sussex, BN43 5FG on Thursday 12 November 2020 starting at 10.00am.**

**THE AGM WILL BE RUN AS A CLOSED MEETING.  
SHAREHOLDERS WILL NOT BE ABLE TO ATTEND IN PERSON.**



We will make arrangements such that the legal requirements to hold the meeting can be satisfied through the attendance of a minimum number of people. The format of the meeting will be purely functional. Details will be provided on our website, in due course.

You should cast your vote on the resolutions via the Form of Proxy. Given the current restrictions, we suggest that you appoint the chair of the meeting as your proxy, rather than a named person who will not be permitted to attend the meeting. Once completed, the Form of Proxy should be submitted to Link Asset Services as soon as possible, and no later than 10.00 am on 10 November 2020.

The Notice of Meeting sets out the resolutions being proposed at the AGM on 12 November 2020 at 10:00am and shareholders can vote separately on each proposal.

Last year, all resolutions were passed with votes ranging from 83.96% to 99.95%.

The AGM in November 2019 was attended by all Directors

in office at the time of the meeting. As a matter of policy the level of proxy votes (for, against and vote withheld) lodged on each resolution is declared at the meeting and displayed on the Company's website. Ricardo's website, [www.ricardo.com](http://www.ricardo.com), contains a wealth of information, including:

- Latest Ricardo news, stock exchange announcements and press releases; and
- Annual report, interim reports and investor presentations.

The Corporate Governance Statement was approved by the Board of Directors on 9 September 2020 and signed on its behalf by:



**Sir Terry Morgan CBE**  
Chair

## Nomination Committee report



**Laurie Bowen**  
Chair of the Nomination Committee

### Chair's Overview

The primary objectives of the Committee are to support the Board in fulfilling its responsibilities to ensure that, firstly, there are formal, rigorous and transparent processes in place for the appointment of new Directors, both to the Board and to senior management positions and, secondly, that there are effective, deliverable and well thought-through succession and contingency planning processes in place across the Group for all key positions.

This year has been particularly busy for the Nomination Committee. Key focus areas included:

- The on-boarding of two new Non-Executive Directors. Details of the selection process were provided in the 2019 Annual Report.
- Reassignment of responsibilities for the Chairs of the Nomination Committee, Remuneration Committee and Senior Independent Director
- Malin Persson assigned as Non-Executive Director responsible for Workforce Engagement.

In the forthcoming year we will be updating talent management and succession planning for Board and senior management positions.

### Laurie Bowen

## Composition

On 14 November 2019 I was appointed Chair of the Nomination Committee, and during the year under review the Nomination Committee comprised the independent Non-Executive Directors Sir Terry Morgan, Peter Gilchrist, Malin Persson, Bill Spencer and, subsequent to their appointment on 5 September 2019, Russell King and Jack Boyer, together with the Chief Executive Officer, Dave Shemmans. The Committee has one scheduled meeting per year, which is supplemented by ad hoc meetings as necessary, and informal meetings between the Committee members.

## Responsibilities

The Committee:

- Evaluates the balance of skills, knowledge and experience of the Board;
- Monitors the leadership needs and succession planning of the Company;
- Considers the training needs of the executive and non-executive members;
- Regularly reviews the structure, size and composition of the Board; and
- Makes recommendations to the Board for executive and non-executive appointments.

Before such recommendations are made, descriptions of the roles and skills required to fulfil each role are prepared for each appointment. To attract suitable candidates, appropriate external advice is taken and interviews conducted by at least two members of the Nomination Committee to ensure a balanced view.

After careful consideration and as announced on 6 September 2019, the Nomination Committee recommended the appointments of Russell King and Jack Boyer OBE as Non-Executive Directors.

As a result of the changing composition of the Board, the Nomination Committee took the opportunity to review the responsibilities of Non-Executive Directors and, with effect from the close of the AGM on 14 November 2019, Russell King was appointed Chair of the Remuneration Committee and Malin Persson was appointed Senior Independent Director.

The search for new Non-Executive Directors during the year was managed with the assistance of recruitment consultants, the Inzito Partnership, who have signed up to the voluntary Code of Conduct for executive search firms. Both new Non-Executive Directors undertook an extensive induction programme to ensure a rounded understanding of the business and our ambitions. The Inzito Partnership has no other connection with the Company.

When an appointment of a Non-Executive Director is made, a formal letter is sent clearly setting out the expected time commitments for the board, committee membership and involvement outside of board meetings. Chosen candidates are required to disclose to the Board any other significant commitments before appointments can be ratified.

Non-Executive Directors, including the Chair, are subject to

rigorous review when they continue to serve on the Board for any term beyond six years.

## Succession Planning

Name	Date of Appointment	Tenure (years)
Dave Shemmans	April 2005	15
Ian Gibson	July 2013	7
Mark Garrett	resigned July 2020	12
Sir Terry Morgan CBE	January 2014	6
Peter Gilchrist CB	retired 14 November 2019	
Laurie Bowen	July 2015	5
Malin Persson	January 2016	4
Bill Spencer	April 2017	3
Jack Boyer OBE	September 2019	-
Russell King	September 2019	-

Following completion of Sir Terry Morgan's second three years of service, the Committee, in his absence, conducted a rigorous review of his performance and confirmed his continued independence as a Non-Executive Director. Accordingly, the Committee unanimously recommended to the Board the renewal of his appointment as Chair of the Board. In addition, Bill Spencer completed his first three years of service and, following review by the Committee, in his absence, the Committee were satisfied of his continued independence as a Non-Executive Director and unanimously recommended the renewal of his appointment to the Board. The Board approved both these renewals at the appropriate time.

The Committee spent time looking at succession planning for the Executive Directors as well as for the Board over the medium term. Following Mark Garrett's resignation, the Committee reviewed executive director appointments to the Board, and concluded that no further executive appointment should be made to the Board at the current time. We also discussed talent management and succession planning for the top-performing senior managers within the business.



# Audit Committee Report



**Bill Spencer**  
Chair of the Audit Committee

## Chair's Overview

As Chair of the Audit Committee, I am pleased to present to you my report for the year ended 30 June 2020.

On behalf of the Board, the Audit Committee has been actively engaged in risk management to provide appropriate challenge and guidance throughout the year. Particular attention has been given to the impact of the COVID-19 pandemic on the trading performance, viability, operations and internal control environment of the Group.

The Committee has also evaluated the effectiveness of the internal control environment to ensure the integrity of the Group's financial reporting. This has included enhancing our internal audit resources with the appointment of PricewaterhouseCoopers LLP ('PwC') to undertake certain internal audit assignments during the year.

I hope that you will find this report useful and I would welcome any comments.

## Bill Spencer

## Composition

I chair the Audit Committee, which during the year under review also comprised the independent Non-Executive Directors, Laurie Bowen, Malin Persson, Jack Boyer and Russell King. This is the first year that Jack Boyer and Russell King have sat on the Audit Committee, both having joined the Committee on 5 September 2019. The competence and experience of all the members of the Audit Committee is set out on pages 88 and 89.

As the Committee's Chair and as is considered desirable by the Financial Reporting Council's Guidance on Audit Committees, I have recent and relevant financial experience and a professional accountancy qualification.

As set out on page 94, the performance of the Audit Committee has been evaluated and is considered to be effective.

The Committee convenes at three scheduled meetings each year and other ad hoc meetings, as required. Details of attendance at meetings held during the financial year are set out on page 91. The Chair, Executive Directors, the Group's Head of Internal Audit and the Company's external auditors all have standing invitations to attend all Committee meetings.

## Responsibilities

The Committee is established by, and is responsible to, the Board. As authorised by the Board, the Committee has obtained all necessary documentation and information it required from officers or employees of the Company, as well as external professional advice. In order to carry out its responsibilities during the year, the Committee undertook the following activities:

- Assessed the Group's risk profile, as well as its appetite for risk on behalf of the Board, and evaluated the effectiveness of the Group's risk management and internal control systems, together with the policies and procedures in relation to ethics, whistleblowing, fraud and bribery prevention;
- Monitored the key risks to the Group in respect of data and cyber security and evaluated the effectiveness of its control environment;
- Considered significant matters arising from internal audits performed during the year, evaluated the effectiveness of the internal audit function, and reviewed the scope and available resource for the internal audit plan in the following year to ensure that it is appropriate;
- Reviewed the scope and planning of the external audit, and evaluated the external auditors' remuneration, effectiveness, independence and objectivity, including consideration of the provision of non-audit services;

- Considered separate reports prepared by the Chief Financial Officer and external auditors on financial reporting and internal control matters as part of the interim review and annual audit processes;
- Assessed the results, on behalf of the Board, of the application of agreed assumptions to re-confirm the continued operational and financial viability of the Group for a period of three years from the date of this report;
- Reviewed the significant financial reporting matters, judgements and estimates, and changes in accounting policies applicable in the preparation of both the Group's interim and year-end consolidated financial statements, which included the transition to IFRS 16 *Leases*, prior to submission to the Board for approval; and
- Evaluated the content of the Annual Report & Accounts as a whole and assessed the processes in place to assure its integrity, to advise the Board on whether the information presented is fair, balanced and understandable, and whether it contains the information necessary for shareholders to assess the Group's position and performance, business model and strategy.

### Risk management

The Committee has monitored the Group's risk management processes and internal control systems as part of its role on behalf of the Board to oversee the Group's approach to risk management and with due consideration to the principal risks and uncertainties facing the Group.

The Committee reviews the Group's policies and procedures in relation to ethics, whistleblowing, and the prevention of fraud and bribery.

### Significant financial reporting matters

The Committee received and considered reports from the Chief Financial Officer in relation to the critical accounting judgements and key sources of estimation uncertainty. Following discussions with senior management and the external auditors, the Committee approved the disclosure as set out in Note 1(c) to the Group financial statements.

The Committee considered the following significant financial reporting matters, judgements and estimates in approving the Group financial statements for the year ended 30 June 2020:

### Considerations of the risk and impact of COVID -19

Management's perception of the risks associated with COVID-19 has been considered as part of the Committee's bi-annual risk profile review. The risks, their potential impacts and the mitigating actions taken are set out in the Group's Principal Risks and Uncertainties on pages 37 to 39. The committee reviewed the impact of COVID-19 on the internal controls and internal audit programme and noted that the core internal control elements of all planned internal audits were undertaken, and that the timing of lockdown did not impact these elements of the test methods of the larger audits. The committee noted that management had maintained all elements of its internal control environment during the lock down and restart periods.

Although the potential impacts of the perceived risks of COVID-19 are inherently uncertain and the full range of identifiable risks and possible outcomes cannot be known, severe but plausible downside scenarios to reflect the impact of a continuation of low levels of trading have been factored into the assessment of the Group's continued viability. In addition, the actuarial assumptions used to value the Group's retirement benefit obligations at the year-end reflect the level of economic uncertainty of COVID-19 as at the reporting date. While no business can fully prepare for, or mitigate against, the potential impacts of COVID-19, the Committee is satisfied that appropriate considerations of the perceived risks associated with COVID-19 have been made, together with reasonable actions taken to mitigate those risks, where possible.

### Considerations of the risk and impact of Brexit

Management's perception of the risks associated with exit of the UK from the European Union has been considered as part of the Committee's bi-annual risk profile review. The risks, their potential impacts and the mitigating actions taken are set out in the Group's Principal Risks and Uncertainties on page 37.

The potential impacts of the perceived risks of Brexit are uncertain. The Committee is satisfied that the severe but plausible downsides in respect of COVID-19, which have been factored into the assessment of the Group's continued viability as stated above, are sufficiently severe as to also encompass the risks to trading from Brexit.



### Revenue recognition on fixed-price contracts

The Group recognises a significant proportion of its consulting revenue from the supply of services under fixed-price contracts, which may span a number of reporting periods. The identification and separate accounting of distinct performance obligations within the context of a contract is a critical judgement in recognising revenue, as set out in more detail in Note 1(c) to the Group financial statements.

A summary of the judgements and estimates taken by management to assess the extent to which these contract assets are recoverable was reviewed by the Committee at the February and September meetings and the positions taken are considered to be appropriate.

The Committee is satisfied that the Group's policies and procedures have been followed to reflect management's best estimate of revenue recognised at the reporting date and that no individual judgement or estimate is expected to have a materially different outcome.

Changes in these estimates may impact revenue recognition and the actual outcome may differ to the estimate made at the reporting date.

### Defined benefit obligation

The Company operates the defined benefit Ricardo Group Pension Fund ('RGPF'). The accounting basis of the RGPF is exposed to changes in the value of its assets and liabilities. The economic uncertainty caused by the COVID-19 pandemic, together with continuing uncertainties around trade negotiations between the UK and European Union, has resulted in a period of significant short-term volatility in markets and therefore in the value of the scheme's assets and liabilities. The liabilities of the RGPF are also sensitive to changes in actuarial assumptions, on which management takes professional advice. Further detail is set out in the financial statements in Note 1(c) and Note 33 to the Group financial statements.

The Committee is satisfied that the assumptions were reviewed by senior management and that the value of the RGPF's liability reflects the best estimate at the reporting date.

### Impact of new accounting standards

IFRS 16 *Leases* became effective for the Group from 1 July 2019. The transitional impact of this standard and the changes required to accounting policies have been reviewed by the Committee and are considered appropriate. Further detail is set out in Note 1, Note 2, Note 3 and Note 18 to the Group financial statements.

### Change in operating segments

In September 2019, the Group announced its intention to report its results for the financial year ending 30 June 2020 using the following reportable operating segments: Energy & Environment ('EE'), Rail, Automotive & Industrial ('A&I'), Defense, and Performance Products. There is also an 'all other segments' segment, comprising the results of Ricardo Strategic Consulting and Software, combined due to their size. This change was driven by successful acquisitions in the Rail and EE segments, in May 2019 and July 2019 respectively, which increased the prominence of these businesses within the Group, combined with a wish to provide more granularity into the key drivers of performance within the Group. Segmental information was provided on this basis in the Group's interim results for the six months to 31 December 2019, which was made available on the Group's website. The Committee considered the presentation of the segmental information and the new segmental reporting structure and concluded these appropriately reflected the management and decision-making structure adopted by the Group from 1 July 2019.

### Internal audit

The internal audit function is accountable to the Committee, and is considered to be a key function for effective risk management.

Historically, internal audit has been led and resourced by suitably skilled and experienced staff from the Group's head office or parts of the Group independent from the business or function being audited. In agreement with the Committee, for the year ended 30 June 2020, a number of divisional internal audits were conducted by PwC. The engagement of PwC has given the Group access to specialist internal audit staff for deployment on higher risk and more complex audits. Responsibility for the internal audit process and setting the internal audit plan has remained with the Group's Head of Internal Audit, who has independently reviewed and scrutinised the work performed by PwC. This co-source approach ensures independence in the internal audit process and the identification of relevant findings and recommendations, and combines external experience with the sharing of best practice around the Group.

All internal audit reports submitted during the year were reviewed by the Committee, and the status of each remedial action is tracked to completion to ensure appropriate resolution. Meetings are held with the Group's Head of Internal Audit without the presence of management.

The Committee also monitored the effectiveness of the Group's internal audit function including the approval of the scope and resources required to carry out work to be performed, and received an external perspective on internal audit development from PwC.

### External audit

KPMG LLP were first appointed the Group's external auditors for the year ended 30 June 2019, following an audit tender process. KPMG were reappointed for the audit of the Group's results to 30 June 2020 at the Group's AGM on 14 November 2019.

### Non-audit services

The Board's policy is that the provision of permissible non-audit services may only be undertaken by KPMG in limited circumstances and is subject to a cumulative cap. In order to remove the possibility of a perceived conflict of auditor objectivity and independence, KPMG has agreed with the Committee that no permissible non-audit services will be provided to Ricardo other than those closely related to the audit of the Group, such as the interim review.

Fees for non-audit services paid to the external auditors during the year were 5% of KPMG's audit fee (FY 2018/19: 9%). The ratio of audit and non-audit fees and the nature of non-audit fees are disclosed in Note 11 to the Group financial statements. Given the nature and scale of the services provided by KPMG, the Committee concluded that these services did not cause any concerns regarding KPMG's objectivity or independence.

There are limited instances where Ricardo enters into business relationships or joint arrangements with KPMG to pursue commercial opportunities, either as a prime contractor, sub-contractor or as part of a consortium, with either party or a third party being the project manager. These business relationships are considered acceptable to the extent that they remain immaterial to both organisations and do not compromise the auditors' independence.

### Independence and effectiveness

Both the Board and KPMG have safeguards in place to ensure the auditors' objectivity and independence cannot be compromised. The Committee supports KPMG in having the necessary professional scepticism in its role. KPMG also provides the Committee with information about policies and processes for maintaining its independence.

The Committee confirms that during the year it has maintained formal and transparent arrangements for considering corporate reporting, risk management and internal control and for maintaining an appropriate relationship with KPMG.

During the year, the Committee carried out its annual effectiveness review of the external auditor, which primarily focused on the 2020 audit. This assessment was completed at the end of the 2020 audit and was based upon KPMG's audit findings and responses to questions from the Committee, together with input from senior management and finance personnel. The Committee also met with the audit partner without management being present. There were no significant findings following the review and it was concluded that the audit process was effective. The Committee recommended to the Board that their re-appointment be proposed to shareholders at the 2020 AGM.



# Directors' remuneration report



## Russell King

Chair of the Remuneration Committee

### PART 1 – CHAIR'S OVERVIEW AND ANNUAL STATEMENT

Dear Shareholder,

This is my first report since becoming Chair of the Remuneration Committee (the 'Committee') in November 2019, taking over from Peter Gilchrist. On behalf of the Board I would like to thank Peter for his hard work and effectiveness in the role.

As reported elsewhere in this Annual Report, the lockdown measures put in place to control the spread of COVID-19 had a negative impact on Ricardo's performance in the second half of the year. Our automotive-related businesses have been most affected, and underlying profit before tax is significantly lower than the prior year. Our Energy & Environment, Defense and Rail businesses have been impacted less and all delivered an increase in profits on the prior year.

The Committee considered carefully how to treat our executives' pay in the light of COVID-19 and whether any reduction to salaries should be made. In reaching the conclusion that no reduction was necessary, several factors influenced our decision. These included that salaries have not been reduced for our workforce; we have not and do not expect to access any UK Government loan scheme; and the Company's use of the UK Government's furlough scheme has been limited. Naturally, we keep these matters under close and ongoing review but consider our response appropriate in the context of the treatment of the wider workforce and properly aligned with the interests of other stakeholders.

### New Directors' Remuneration Policy and Implementation

At the 2020 AGM we will be submitting our Directors' Remuneration Policy for renewal by our shareholders. After a thorough review of the current directors' remuneration policy during FY 2019/20, the Committee has concluded there are several changes to the policy that will better align with Ricardo's strategy at this stage of its development. As part of the process we have consulted with our major shareholders on the proposed policy. I would like to thank those shareholders who participated for their feedback and guidance, which resulted in changes to the original proposal.

The directors' remuneration policy we are proposing is:

- simpler and more straightforward;
- better aligned with practice internally and externally;
- competitive and fair; and
- remains focused on performance.

The policy not only rewards the high performance that our shareholders require but also encourages share ownership and fosters alignment of interest between the Executive Directors and shareholders.

In short, we think that the policy shareholders are being asked to approve at the 2020 AGM will work well for Ricardo in light of:

- our medium term business plans;
- our continued longer-term diversification approach;
- our growth plans, both organic and through carefully considered acquisitions;
- the time horizons of an international consultancy business;
- shareholders' views on executive pay; and
- the requirements of the new Corporate Governance Code.

The principal modifications we are proposing are:

#### *Pension provision*

- The pension of incumbent Executive Directors will be aligned to the pension provision levels of the UK workforce (currently 7% of salary) by 1 January 2022 (in addition to any new appointees being set at this level from the date of joining).
- For the Chief Executive Officer and Chief Financial Officer this will be 7% of salary. However, the Chief Executive Officer will receive a further 1.2% in line with all other employees who were previously members of the former Ricardo group defined benefit plan.

#### *Annual bonus*

- A cash conversion measure replaces net debt and the weightings of measures are being harmonised across all the Executive Directors.
- A third of any bonus paid will be deferred into shares for three years. This is in line with FTSE SmallCap norms and the three-year deferral is at the upper end of market practice.

#### Long-term incentives

- To simplify our incentive arrangements, the bonus-linked shares are being removed and therefore going forward long-term incentive awards will only be made under the new 2020 LTIP (see below).
- A two-year holding period under the 2020 LTIP is being introduced for future grants to Executive Directors once any shares have vested.

As it has been a number of years since the current LTIP was adopted the introduction of a new 2020 Long Term Incentive Plan ('LTIP') will also be proposed alongside the new policy. The 2020 LTIP will be similar in structure to the current plan but will reflect the terms of our proposed policy as well as current developments in market practice and legislative changes.

We are also proposing to take the opportunity to align the award levels for the Chief Financial Officer more closely to the market.

The table below shows the maximum long-term incentive award levels under the current and proposed policies.

The proposed LTIP maximum going forward results in a small reduction compared with the current arrangements for the Chief Executive Officer. For the Chief Financial Officer, the maximum award level increases by 25% of salary. The Committee has set these award levels considering appropriate levels of internal relativities and is aware that the proposed level is not out of line with award levels in similar sized companies. For the avoidance of doubt, we regard market practice as one input only of several but when we look at the competitiveness of pay, we look at total target, maximum and realised remuneration.

#### Share ownership guidelines

- A 200% share ownership guideline for all Executive Directors is introduced with a requirement that 50% of any gains from any share awards (vesting of LTIP or deferred bonus awards) be retained until the increased level is met.
- The increased share ownership guideline (from 100% to 200%) is to be extended for two years post-cessation with 200% of salary (or actual holding if lower) to be held for an initial 12-month period and half of this level to be held for the second 12-month period. LTIP and deferred bonus grants made following the shareholder approval of the new policy will be subject to these post-cessation restrictions.

The Committee thinks the suggested approach to these post-cessation requirements is appropriate for Ricardo as it is being introduced at the same time as the in-post shareholding guideline is being increased. The guideline level for the second-year post-cessation will therefore be equal to the current in-post level of 100% of salary.

The post-cessation restrictions are to apply to any LTIP and deferred bonus awards granted following approval of the new policy in order to avoid changing the terms of currently outstanding awards.

## Pay outcomes and performance for FY 2019/20

Basic salaries for the Executive Directors were increased from 1 January 2020 by 3% against a Group-wide average increase of 3%.

The negative impact of COVID-19 on profitability resulted in the Group's underlying profit before tax for the year, as adjusted for bonus purposes (on which 60% of the Executive Directors' total bonus opportunity is based) being £15.3m, which was below the threshold we set for bonus purposes. Performance against the net debt measure was also below the threshold target. Using its overarching discretion, the Committee determined that, despite very impressive leadership of the business during exceptionally difficult times, no bonuses would be payable in respect of FY 2019/20, notwithstanding that the Executive Directors achieved part of their non-financial objectives for the year.

In October 2019, awards under the LTIP granted in October 2016, and the bonus-linked shares that were granted at the same time, lapsed on the basis of underlying EPS and TSR performance over the relevant performance periods.

The Committee is satisfied that the current remuneration policy has operated as intended during FY 2019/20 and incentive outcomes are in line with Company performance. In short, Executive Directors received no variable remuneration in respect of FY 2019/20.

## Remuneration for FY 2020/21

The first award under the new 2020 LTIP will be made in November 2020 shortly following the AGM. The Committee has been considering the most appropriate performance targets to be attached to the first award under the new plan. The intention is to continue to use a mix of EPS and TSR measures. Due to the current high level of uncertainty surrounding setting suitably stretching EPS targets, the EPS targets are yet to be finalised and will be confirmed by the Committee in due course and, in accordance with recent guidance from the Investment Association, no later than six months following grant. Full details of the targets will be set out in an RNS announcement issued immediately after the LTIP award is granted or subsequently if they are determined later.

The Committee will also determine the appropriate size of award at the time of grant reflecting various considerations such as the share price around the grant date. As confirmed in the new policy, the Committee has the ability to adjust the formulaic outcomes from performance conditions where appropriate and the Committee will ensure that outcomes reflect Company and executive performance as well as the experience of shareholders and other stakeholders. The Committee will also use its discretion to reduce vesting outcomes where it determines that windfall gains have been received.

Executive Director	2017 Directors' Remuneration Policy			2020 Policy	
	Bonus-Linked Shares Maximum	LTIP Maximum	Total	LTIP Maximum	
CEO	62.5%	100%	162.5%	150%	
CFO	50%	55%	105%	130%	



## Ricardo's employees across the Group

Our employees are global experts and are crucial to the delivery of our strategy and to the success of our business. We strive to recruit the best talent and to retain a diverse and inclusive workforce through apprenticeships, graduate recruitment and industry hire programmes. We invest in the development of the skills and competencies of our staff, providing equal opportunities for all.

From the beginning of the COVID-19 crisis, we set out a "Healthy people, healthy business" agenda. This focused on supporting our employees and their families together with the health and wellbeing of our clients, suppliers and the communities in which we operate.

The Committee receives regular updates on overall pay and conditions in the Company and this report includes for the first time our CEO to employee pay ratio which the Committee has reviewed. In making decisions on executive pay, the Committee considers wider workforce remuneration and conditions and is satisfied that the overall executive remuneration structure remains appropriate.

## AGM

We trust that you find this Report to be informative and transparent, and we hope to receive your support for the three remuneration-related resolutions at the AGM on 12 November 2020:

- Approval of the 2020 Directors' Remuneration Policy;
- Approval of the FY 2019/20 Directors' Annual Report on Remuneration; and
- Approval of the 2020 LTIP, as summarised in the Notice of AGM.

If you have any questions or comments on the Directors' Remuneration Report please do contact me through Patricia Ryan, Ricardo's Group Legal Counsel and Company Secretary, at [patricia.ryan@ricardo.com](mailto:patricia.ryan@ricardo.com).

## Russell King

Chair of the Remuneration Committee

## SUMMARY OF THE KEY ELEMENTS OF EXECUTIVE DIRECTORS' PAY IN FY 2019/20

	Dave Shemmans CEO	Ian Gibson CFO	Mark Garrett CSO
<b>Base salary (effective 01/01/2020)</b>	£530,484	£344,816	£296,589
<b>Other benefits</b>	<ul style="list-style-type: none"> <li>• Company car allowance: £17,500;</li> <li>• Private fuel;</li> <li>• Private medical insurance; and</li> <li>• Life assurance.</li> </ul>	<ul style="list-style-type: none"> <li>• Company car allowance: £12,000;</li> <li>• Private fuel;</li> <li>• Private medical insurance; and</li> <li>• Life assurance.</li> </ul>	<ul style="list-style-type: none"> <li>• Company car allowance: £12,000;</li> <li>• Private fuel;</li> <li>• Private medical insurance; and</li> <li>• Life assurance.</li> </ul>
<b>Pension</b>	21.2% <sup>(1)</sup> of salary (over Lower Earnings Limit)	20% <sup>(1)</sup> of salary (over Lower Earnings Limit)	20% <sup>(1)</sup> of salary (over Lower Earnings Limit)
<b>Annual bonus with deferral of half of any bonus earned</b>	<ul style="list-style-type: none"> <li>• Maximum opportunity of 125% of salary;</li> <li>• Based on underlying PBT (60%), net debt (15%) and personal targets (25%); and</li> <li>• 50% of any bonus to be deferred into shares for three years.</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum opportunity of 100% of salary;</li> <li>• Based on underlying PBT (60%), net debt (20%) and personal targets (20%); and</li> <li>• 50% of any bonus to be deferred into shares for three years.</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum opportunity of 100% of salary;</li> <li>• Based on underlying PBT (60%), net debt (20%) and personal targets (20%); and</li> <li>• 50% of any bonus to be deferred into shares for three years.</li> </ul>
<b>Long-term incentive shares</b>			
(A) Bonus-linked shares <sup>(2)</sup>	62.5% of salary	50% of salary	50% of salary
(B) Long-term incentive plan <sup>(3)</sup>	100% of salary	55% of salary	55% of salary
<b>Total maximum annual award of shares (A + B)</b>	162.5% of salary	105% of salary	105% of salary
<b>Share ownership and retention policy</b>	<ul style="list-style-type: none"> <li>• A minimum of 100% of base salary;</li> <li>• Net value of all vested shares to be retained until holding met; and</li> <li>• Year-end holding is 80% of base salary.<sup>(4)</sup></li> </ul>	<ul style="list-style-type: none"> <li>• A minimum of 100% of base salary;</li> <li>• Net value of all vested shares to be retained until holding met; and</li> <li>• Year-end holding is 58% of base salary.<sup>(4)</sup></li> </ul>	<ul style="list-style-type: none"> <li>• A minimum of 100% of base salary;</li> <li>• Net value of all vested shares to be retained until holding met; and</li> <li>• Year-end holding is 84% of base salary.<sup>(4)</sup></li> </ul>

(1) This reflects legacy pension arrangements. Arrangements for any new Executive Directors are shown on page 121. In line with payments given to all employees who were previous members of the old defined benefit scheme operated by the Company, the current Chief Executive Officer is entitled to an additional 1.2% of salary pension contribution bringing the total to 21.2%.

(2) Maximum award on grant of bonus-linked shares:

a. An award of shares with a value on grant of half the gross equivalent of any annual bonus declared;

b. Vests approximately four years from the start of the bonus performance period if executive still in service and additional performance criteria are met over a three-year period: based on a mix of underlying EPS growth and TSR vs. FTSE Small Cap Index (excluding financial services companies and investment trusts);

c. Net value of all vested shares to be retained until share ownership requirement met; and

d. The value of the bonus-linked shares granted in 2019 (which related to the annual bonus payable in respect of the FY 2018/19) was 16%, 13% and 11% of salary for the CEO, CFO and CSO respectively.

(3) Face value of award of long-term incentive plan shares granted in October 2019 was 100%, 55% and 55% of salary for the CEO, CFO and CSO respectively:

a. Subject to three-year performance conditions: two-thirds underlying EPS growth, one-third TSR vs. FTSE Small Cap Index (excluding financial services companies and investment trusts); and

b. Net value of all vested shares to be retained until share ownership requirement met.

(4) Calculated by reference to the number of beneficially owned shares, a share price of 419.0p per share (2019: 760.0p) and salaries as at 30 June 2020.

## PART 2 – ANNUAL REPORT ON REMUNERATION

This section of the report explains how Ricardo's Directors' Remuneration Policy, which was last approved in 2017, has been implemented during the financial year ended 30 June 2020. The paragraphs in this Annual Report on Remuneration that have been audited are indicated.

### The Remuneration Committee

During the year under review, the Committee was chaired by Peter Gilchrist (until he retired from the Board on 14 November 2019), and Russell King (from 14 November 2019 – Russell became a member of the Committee on appointment on 5 September 2019). The Committee also comprised Sir Terry Morgan, Laurie Bowen, Malin Persson, Bill Spencer and Jack Boyer (from 5 September 2019).

The Non-Executive Directors serving on the Committee have no personal financial interest (other than as shareholders) in matters to be decided, no potential conflicts of interest arising from cross-directorships and no day-to-day involvement in running the business. Biographical details of the members of the Committee are shown on pages 88 and 89; details of attendance at the meetings of the Committee during the year ended 30 June 2020 are shown on page 91. Prior to his appointment as Chair of the Committee, Russell King had served on a remuneration committee for at least 12 months.

### Advisors to the Remuneration Committee

The Committee is supported by the Group HR Director (Timothy Hargreaves), the Group Head of Remuneration (Mark Jarvis) and the Company Secretary (Patricia Ryan). The Chief Executive Officer (Dave Shemmans) attends the Committee's meetings by invitation and is consulted in respect of certain proposals.

The Chief Financial Officer (Ian Gibson) may be invited to attend meetings to address specific matters. Neither the Chief Executive Officer nor the Chief Financial Officer is consulted or involved in any discussions in respect of their own remuneration.

During the year, FIT Remuneration Consultants and Shepherd and Wedderburn (who have been jointly appointed by the Committee following a competitive tender process) provided independent advice on matters under consideration by the Committee and updates on legislative requirements and market practice.

FIT Remuneration Consultants' fees for this work amounted to £47,657 (calculated based on a mixture of fixed fees and time spent). Shepherd and Wedderburn's fees for advising the Committee amounted to £38,593 (also calculated based on a mixture of fixed fees and time spent). Shepherd and Wedderburn also advises Ricardo on the design, implementation and operation of its various share incentive plans.

FIT Remuneration Consultants are members of the Remuneration Consultants Group and their work is governed by its Code of Conduct. Shepherd and Wedderburn is a law firm and is regulated accordingly. Having carefully considered all relevant factors and using its judgement, the Committee is satisfied that the advice provided on executive remuneration is objective and independent and that no conflict of interest arises.

### Voting outcome at AGM

The AGM for the financial year ended 30 June 2019 was held on 14 November 2019. The result of the vote on the remuneration report is set out below. The remuneration policy in operation during the year was approved by shareholders at the 2017 AGM; details of this approval are also set out in the table below.

Votes <sup>(1)</sup>	Annual report on remuneration approved at 2019 AGM		Directors' Remuneration Policy approved at 2017 AGM	
	%	Number	%	Number
For, including discretion	91.48	35,718,805	94.0	35,127,967
Against	8.52	3,327,990	6.0	2,224,774
Total votes cast	100.00	39,046,795	100.0	37,352,741
Withheld <sup>(1)</sup>		2,775		1,851,358

(1) Excludes withheld votes. A vote withheld is not a vote in law and so is not counted for the purposes of the calculation of the proportion of votes 'for' and 'against' a resolution.

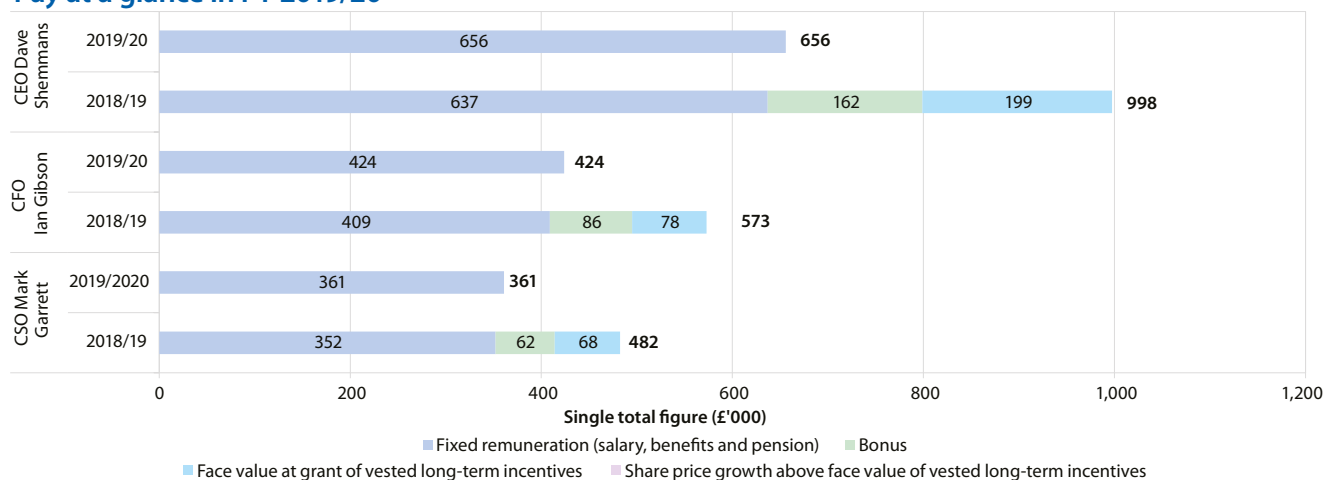
## Performance at a glance in FY 2019/20 compared with FY 2018/19

Bonus performance outcomes		Long-term incentive performance outcomes in respect of awards vested in 2019	
Underlying PBT (adjusted)	Net debt (adjusted)	3-year underlying EPS growth in excess of RPI	3-year TSR growth
<b>£15.3m</b>	<b>£(58)m</b>	<b>Overall (12.4)% to 30 June 2019</b>	<b>(31.2)%</b>
(FY 2019/20)	(FY 2019/20)	(below threshold vesting level)	(below median to October 2019)
£36.7m	£(26.2)m	Overall 26.9% to 30 June 2018.	(2.8)%
(FY 2018/19)	(FY 2018/19)	(between threshold and maximum vesting levels)	(below median to October 2018)

The closing mid-market price of the Company's shares on 30 June 2020 was 419.0p per share (2019: 760.0p). The highest closing price during the year was 820.0p per share and the lowest closing price during the year was 316.0p per share.



## Pay at a glance in FY 2019/20



(1) No annual bonuses were awarded to the Executive Directors in respect of FY 2019/20.

(2) The long-term incentive awards granted in FY 2016/17 lapsed in full in FY 2019/20. As a result, the face value at grant of these awards and any share price appreciation has not been shown in the above table.

(3) As the share price decreased over the life of the long-term incentive awards that vested in FY 2018/19, the face value at grant of these awards has been adjusted accordingly and no share price appreciation is shown.

## Single total figure table (audited)

The table below sets out the remuneration received by the Executive Directors and Non-Executive Directors during the year.

Financial year	Fixed remuneration			Short-term variable remuneration			Long-term variable remuneration: 3-year performance periods			Totals		
	Base salary and fees £'000	Benefits <sup>(1)</sup> £'000	Pension £'000	Bonus (cash element) <sup>(2)</sup> £'000	Bonus (deferred element) £'000	Total £'000	Bonus-linked shares <sup>(3)</sup> £'000	LTIP <sup>(4)</sup> £'000	Total £'000	Total Fixed Remuneration £'000	Total Variable Remuneration £'000	
<b>EXECUTIVE DIRECTORS</b>												
Dave Shemmans	2019/20	523	23	110	-	-	-	-	-	656	656	-
	2018/19	508	23	106	81	81	162	54	145	199	998	361
Ian Gibson	2019/20	340	17	67	-	-	-	-	-	-	424	424
	2018/19	328	17	64	43	43	86	27	51	78	573	164
Mark Garrett	2019/20	292	12	57	-	-	-	-	-	-	361	361
	2018/19	284	12	56	31	31	62	23	45	68	482	130
<b>NON-EXECUTIVE DIRECTORS</b>												
Sir Terry Morgan CBE	2019/20	157	1	-	-	-	-	-	-	-	158	158
	2018/19	152	1	-	-	-	-	-	-	-	153	153
Peter Gilchrist CB <sup>(5)</sup>	2019/20	25	1	-	-	-	-	-	-	-	26	26
	2018/19	65	1	-	-	-	-	-	-	-	66	66
Russell King <sup>(6)</sup>	2019/20	46	1	-	-	-	-	-	-	-	47	47
	2018/19	-	-	-	-	-	-	-	-	-	-	-
Laurie Bowen <sup>(7)</sup>	2019/20	50	35	-	-	-	-	-	-	-	85	85
	2018/19	49	57	-	-	-	-	-	-	-	106	106
Malin Persson	2019/20	55	4	-	-	-	-	-	-	-	59	59
	2018/19	49	8	-	-	-	-	-	-	-	57	57
Bill Spencer	2019/20	59	1	-	-	-	-	-	-	-	60	60
	2018/19	57	1	-	-	-	-	-	-	-	58	58
Jack Boyer <sup>(8)</sup>	2019/20	42	1	-	-	-	-	-	-	-	43	43
	2018/19	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	2019/20	<b>1,589</b>	<b>96</b>	<b>234</b>	-	-	-	-	-	-	<b>1,919</b>	<b>1,919</b>
	2018/19	1,492	120	226	155	155	310	104	241	345	2,493	1,838

(1) Further information on benefits for the Executive Directors can be found on page 109. The benefits for Non-Executive Directors represent reimbursement of expenses incurred (including any associated personal tax charges) while travelling for business and Committee meetings.

(2) Further details of the annual bonus can be found from page 109.

(3) Further details of the lapse of the bonus-linked shares in FY 2019/20 can be found on page 115. As no bonus-linked shares vested in the year, share price appreciation had no impact on the relevant figure included in the above table.

(4) Further details of the lapse of the LTIP awards in FY 2019/20 can be found on page 114. As no LTIP shares vested in the year, share price appreciation had no impact on the relevant figure included in the above table.

(5) Peter Gilchrist retired as a Director on 14 November 2019.

(6) Russell King was appointed as a Director on 5 September 2019 and Chair of the Remuneration Committee on 14 November 2019.

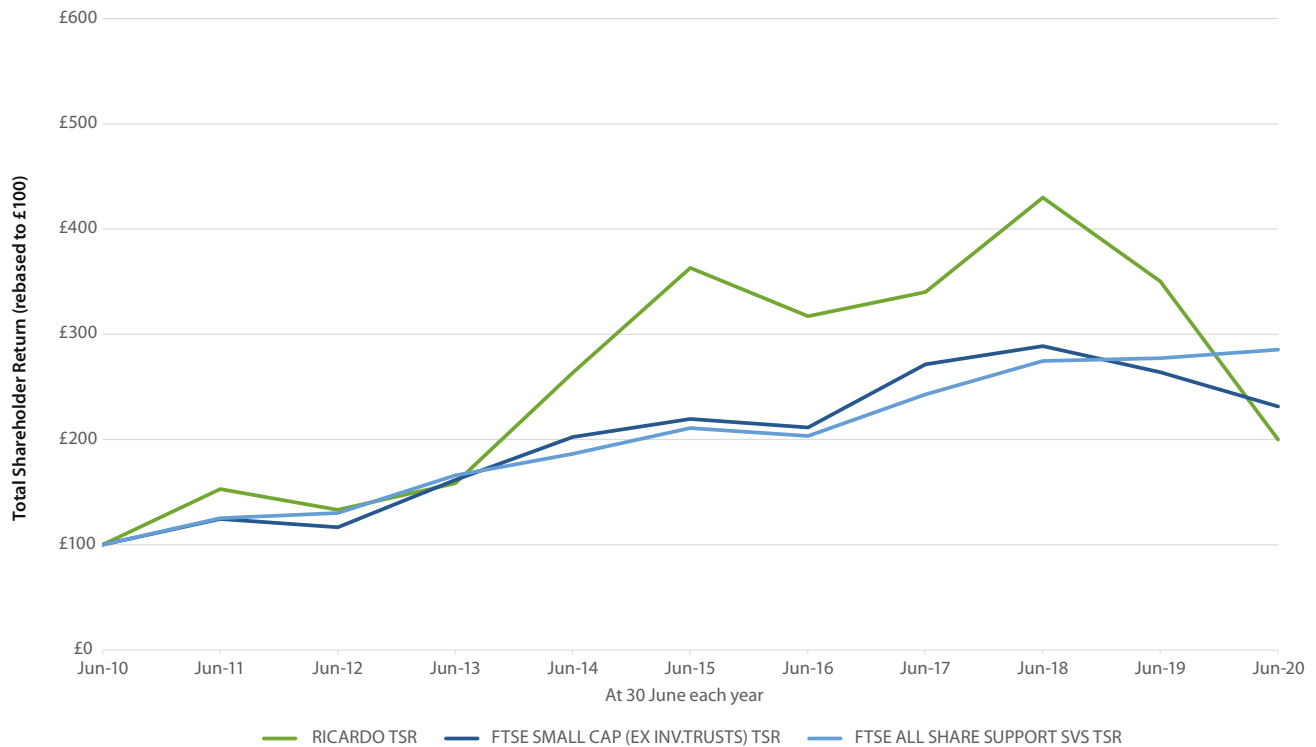
(7) Laurie Bowen's benefits largely consist of travel expenditure to and from the United States.

(8) Jack Boyer was appointed as a Director on 5 September 2019.

Following the year-end, the Committee considered whether there were any circumstances that could or should result in the recovery or withholding of any sums pursuant to the Company's clawback arrangements. The conclusion reached by the Committee was that it was not aware of any such circumstances.

## Pay for performance – TSR performance graph and CEO pay history

TSR for the ten years to 30 June 2020



The chart above shows Ricardo's TSR performance for the past ten years against the FTSE Small Cap index (excluding investment trusts). In the Committee's opinion, the FTSE Small Cap index (excluding investment trusts) represents an appropriate index against which the Company should be compared when considering the Company's size. The FTSE All Share Support Services index is also shown for information. The remuneration of the Chief Executive Officer, Dave Shemmans, for the same period is shown in the table below.

Financial year	Single figure of CEO's total remuneration	Annual variable element award rates against maximum opportunity	Long-term incentive vesting rates against maximum opportunity
	£'000	%	%
2019/20	656	-	-
2018/19	998	25	40
2017/18	1,411	43	74
2016/17	1,612	-	100
2015/16	2,291	63	100
2014/15	1,367	59	67
2013/14	760	38	N/A <sup>(1)</sup>
2012/13	1,546	75	77
2011/12	979	58	35
2010/11	1,116	97	46

(1) The performance period for awards made in November 2011 ended in October 2014 and so their vesting rate is included in the 2014/15 row of the table above. The vesting rate is 'N/A' for the 2013/14 row because the performance period for awards made in October 2010 ended in June 2013 and so the applicable vesting rate for those grants is included in the 2012/13 row of the table above.



## Directors' remuneration compared to employees

The table below compares the percentage change in the Directors' remuneration, and the percentage change in the remuneration of all employees (on a full time equivalent basis), between FY 2018/19 and FY 2019/20. The year-on-year change in annual bonus of (100)% shown in the final column for both "All Employees" and the Executive Directors reflects the fact that no annual bonus is payable in respect of FY 2019/20.

	% change in base salary and fees	% change in taxable benefits	% change in annual bonus
<b>All Employees</b>	3	-	(100)
<b>EXECUTIVE DIRECTORS</b>			
<b>Dave Shemmans (CEO)</b>	3	-	(100)
<b>Ian Gibson (CFO)</b>	3	-	(100)
<b>Mark Garrett (CSO)<sup>(1)</sup></b>	3	-	N/A
<b>NON-EXECUTIVE DIRECTORS</b>			
<b>Sir Terry Morgan CBE</b>	3	-	N/A
<b>Peter Gilchrist CB<sup>(2)</sup></b>	(62)	-	N/A
<b>Russell King<sup>(3)</sup></b>	N/A	N/A	N/A
<b>Laurie Bowen<sup>(4)</sup></b>	3	(39)	N/A
<b>Malin Persson<sup>(4)(5)</sup></b>	14	(52)	N/A
<b>Bill Spencer</b>	3	-	N/A
<b>Jack Boyer<sup>(6)</sup></b>	N/A	N/A	N/A

(1) As Mark Garrett resigned as an Executive Director, he was not eligible to receive any bonus that may have been declared for FY 2019/20.

(2) Peter Gilchrist retired as a Director and Chair of the Remuneration Committee on 14 November 2019.

(3) Russell King was appointed as a Director on 5 September 2019 and Chair of the Remuneration Committee on 14 November 2019.

(4) The reduction in taxable benefits for Laurie Bowen and Malin Persson reflects a lower level of travel and associated costs compared to the prior year.

(5) The higher percentage change in Malin Persson's fees reflects her appointment as Senior Independent Director on 14 November 2019.

(6) Jack Boyer was appointed as a Director on 5 September 2019.

(7) The Non-Executive Directors are not eligible to participate in the bonus scheme.

## Pay ratio information in relation to Chief Executive's remuneration

Year	Method of calculation adopted	25 <sup>th</sup> percentile pay ratio (CEO : UK employees)	Median pay ratio (CEO : UK employees)	75 <sup>th</sup> percentile pay ratio (CEO : UK employees)
2020	Option A	19 : 1	14 : 1	10 : 1

Pay data for the Chief Executive Officer is taken from the total single figure of remuneration table on page 106. The median, 25th percentile and 75th percentile figures used to determine the above ratios were calculated by reference to the full-time equivalent annualised remuneration (comprising salary, benefits, pension, annual bonus and long term incentives) of all UK based employees of the Group as at 30 June 2020 (i.e. "Option A" under the applicable regulations). The Committee selected this calculation methodology as it was felt to produce the most statistically accurate result available to it.

The Committee considers that the median pay ratio for 2020 that is disclosed in the above table is consistent with the pay, reward and progression policies for the Company's UK employees taken as a whole. Consistent with practice elsewhere, executives have a greater proportion of their overall pay subject to performance than other staff. Accordingly, the ratio may prove volatile from year to year. The Committee has considered the wider workforce context in terms of alignment of total reward for the Executive Directors, with the pension changes in the proposed new policy being one such example.

Pay details (on a full-time equivalent annualised basis where appropriate) for the individuals whose FY 2019/20 remuneration is at the median, 25th percentile and 75th percentile amongst UK based employees are as follows:

	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile
Salary	£31,515	£41,992	£61,761
<b>Total pay and benefits</b>	<b>£33,621</b>	<b>£45,251</b>	<b>£65,271</b>

## Relative importance of pay spend

The following table sets out the total amounts spent on remuneration for all employees, the dividends declared and other significant distributions to shareholders in FY 2018/19 and FY 2019/20.

	FY 2019/20	FY 2018/19	% change
Total remuneration spend (£m)	188.5	179.9	4.8
Key management remuneration as a percentage of total remuneration spend <sup>(1)</sup> (%)	2.7	2.7	-
R&D expenditure <sup>(2)</sup> (£m)	12.5	13.4	(6.7)
Distributions to shareholders <sup>(3)</sup> (£m)	3.3	11.5	(71.3)

(1) The key management personnel are the Board of Directors, together with the Managing Directors who have the authority and responsibility for planning, directing and controlling the Group's activities and resources within the market sectors in which the Group operates. Further details on key management remuneration can be found on page 183. All shares that were vested during the year were also exercised for their price of nil. This measure was chosen in order to give greater context for the scale of key management remuneration within Ricardo.

(2) Further details on R&D expenditure can be found on pages 15 and 45. This measure was chosen because of the importance to Ricardo's business of developing its R&D portfolio.

(3) The only distributions made by the Company over these years were in the form of dividends.

## Detailed breakdown of pay in FY 2019/20

### Base salary

Base salaries were reviewed with effect from January 2020. As described in the policy section on page 121, a number of factors are taken into account when salaries are reviewed, principally: market levels of total pay for comparable roles in companies of a similar size, complexity and sector; the individual's experience, scope of responsibilities and performance; and the salary increases for employees across the Group. The current salary levels from 1 January 2020 for the Executive Directors are shown in the table below which reflect a 3% salary increase. The Group-wide average increase approved in FY 2019/20 was 3%.

Executive Director	Salary from 1 January 2020
Dave Shemmans (CEO)	£530,484
Ian Gibson (CFO)	£344,816
Mark Garrett (CSO)	£296,589

### Other benefits (audited)

The Company provides other cash benefits and benefits in kind to its Executive Directors. These include a company car or cash alternative, private fuel, private medical insurance, life assurance and permanent health or disability insurance. The car allowance levels remain unchanged and are set at £17,500 p.a. for Dave Shemmans and at £12,000 p.a. for Ian Gibson and Mark Garrett.

Non-Executive Directors can recover travel and accommodation expenses for carrying out their duties and do not receive any other benefits. If tax is payable by a Non-Executive Director on expenses received, these may be paid gross of tax.

### Pension (audited)

(a) The defined benefit scheme is closed and there are no active members. During the year ended 30 June 2020, the transfer value in respect of the Chief Executive Officer has increased. The transfer value at 30 June 2020 was £721,595, an increase of £81,002 from the prior year. The Chief Executive Officer's Normal Retirement Date ('NRD') is 16 June 2031, at which point he will receive his pension at the date of leaving the fund, increased for the period in deferment until his NRD. If he decides to retire early, he will receive an immediate pension calculated as for retirement at NRD but reduced for early payment.

(b) With respect to defined contribution pension schemes:

	Employer contributions payable in the year	Cash in lieu
	£'000	£'000
Dave Shemmans (CEO)	4	106
Ian Gibson (CFO)	-	67
Mark Garrett (CSO)	2	55

## Annual performance-related bonus (audited)

### Introduction

For the year ended 30 June 2020, the maximum annual performance-related bonus opportunity was 125% of salary for the Chief Executive Officer and 100% of salary for any other Executive Director. To determine the amount of bonus payable for the year, the Committee assessed the level of achievement against the financial measures and targets set in respect of:

- Group underlying profit before tax (60% for each of the Executive Directors);
- Group net debt at year-end (15% for the CEO and 20% for the other Executive Directors); and
- The achievement of specified individual objectives (25% for the CEO and 20% for the other Executive Directors).

The choice of these measures, and their respective weightings for each individual, reflected the Committee's belief that any incentive compensation should be tied both to the overall performance of the Group and to those areas of the business that the relevant individual can directly influence.

### Details of financial targets

The financial targets for the 2019/20 financial year (details of which are provided in the following table along with confirmation of their respective weightings) were set by the Committee after taking into account several factors such as the business plan, management's expectations and brokers' forecasts.



## Detailed breakdown of pay in FY 2019/20 (continued)

Annual performance-related bonus (audited) (continued)

Measure	Weighting (% of maximum opportunity)			Threshold	Performance required (£m)	
	CEO	CFO	CSO		On-target	Maximum
Underlying profit before tax	60	60	60	40.0	42.0	44.0
Group net debt balance	15	20	20	(51.4)	(47.4)	(45.4)

A sliding scale of targets for each financial measure of the Group was set at the start of the 2019/20 financial year:

Performance achieved	Element payable
Threshold	-
On-target	50%
Maximum	100%
Between any two performance levels	Sliding scale between the above percentages

### Details of personal objectives

The personal objectives of the Executive Directors were different for each individual and were ascribed different weightings. The Committee, supported by the Chair of the Board in the case of Dave Shemmans, and supported by Dave Shemmans in the case of the other Executive Directors and members of the leadership team, sets the personal

objectives at the start of the year. The Committee usually identifies 'strategic areas' which each Executive Director is asked to focus on and seeks to ensure that all personal objectives are specific, measurable and are indirect drivers of financial performance and value creation. They usually set five objectives and weight them in accordance with their relative importance. At the end of the year, based on a formal and qualitative assessment of performance against each objective (at half year and full year), the Committee decides how well each individual has performed overall.

The targets set by the Committee take into account a number of issues shown in the table below but also include an assessment against other strategic and business critical issues which are planned, or occur during the year, but are not declared as they are business sensitive.

The targets set by the Committee for the Chief Strategy Officer have not been included in the table below as, following his resignation, he is not eligible for a performance-related bonus for FY 2019/20.

	Personal objectives FY 2019/20	Examples of performance outcomes against personal objectives	Overall achievement (%)
<b>Dave Shemmans (CEO)</b>	<ul style="list-style-type: none"> <li>Focus on on-boarding and embedding new Managing Directors to strengthen the Company's executive committee. Enable the executive committee to deliver a more commercial culture throughout the business and inter-divisional collaboration. Develop and strengthen management succession planning and increase diversity.</li> <li>Continue to focus and deliver on a strategy of acquisitive growth with a view to building sustainable revenue and aim to maintain business balance.</li> <li>Maintain turn around delivery of the US business in line with budget and meet targets for order book levels.</li> <li>Maintain the high level of time dedicated to strategic relationships and support of corporate objectives.</li> <li>Continue to deliver the strategy and reinforce the broader based business in the minds of stakeholders and internal teams. Aim to increase the rating of the business by increasing the promotion and communication of higher value added parts of the business. Continue to develop employee engagement around the 'Creating a world fit for the future' mission.</li> <li>Manage risks and opportunities created by Brexit and ensure the FY 2019/20 budget and sustainable operational strategy is in place to respond to the changes.</li> </ul>	<ul style="list-style-type: none"> <li>Increased diversity with new recruits during the year at and below board level. Successfully embedding and on-boarding all new Managing Directors which has strengthened the Company's executive committee.</li> <li>The acquisitions completed at the start of the year have been integrated and are performing well.</li> <li>Increased time spent with shareholders, analysts and the team. However, customer interaction in the second half of FY 2019/20 was difficult due to customer closures during lockdown.</li> <li>Managed the business through a high impact COVID-19 Phase, strengthened the financial liquidity and continued profitable delivery with the minimum of government support as a philosophy.</li> <li>Maintained high levels of transparency and communications with all stakeholders and led through a digital-first/virtual work from home mode with minimal disruption to the business.</li> <li>Business strategy has been developed and divisional alignment documented and agreed. Increased communication with employees including a survey which has yielded positive results, particularly in relation to morale and culture.</li> <li>Effective management of the unpredictable nature of Brexit in first half of FY 2019/20 with the focus on managing the impact of COVID-19 in the second- including the design and free provision of 10,000 face masks to care homes and the NHS.</li> </ul>	86.5%
<b>Ian Gibson (CFO)</b>	<ul style="list-style-type: none"> <li>Lead work with divisional finance management to ensure profit and cash delivery and drive process improvements to support forecasting.</li> <li>Deliver robust audit design so as to be target-driven and compliant.</li> <li>Continue to evolve and improve the management and corporate reporting to meet governance, best practice and simplicity requirements.</li> <li>In support of strong divisional business models, lead regular reviews of pricing, fees and utilisation with financial directors across the Group.</li> <li>Progress the finance team development and create career progression and ensure retention and diversity.</li> </ul>	<ul style="list-style-type: none"> <li>In light of the COVID-19, there was a focus on extreme cash management and liquidity and ensuring that the financial directors across the Group were focussed on the same topic. Cash performance outperformed COVID-19 expectations.</li> <li>Rolled out new segmentation and increased transparency and granularity of segmental reporting, in line with FCA guidance. Further improvement planned with external Investor Relations support however this was put on hold to manage the impact of COVID-19.</li> <li>Effectively managed movements and maternity leave in his team and has developed a high performing and high work ethic professional team.</li> </ul>	85%

## Detailed breakdown of pay in FY 2019/20 (continued)

### Annual performance-related bonus (audited) (continued)

#### Committee's assessment of achievement levels and determination of bonuses payable

The performance of the Group over the year included a 58% decrease in underlying profit before tax to £15.6m (2019: £37.0m) and a year-end net debt of £(73.4)m (2019: £(47.4)m).

The Group underlying profit before tax of £15.6m was adjusted by £0.3m for acquisition-related expenditure. The adjusted profit performance at £15.3m is below the lower threshold of £40.0m and therefore no bonus is payable in respect of Group underlying profit before tax. The Group net debt of £(73.4)m was adjusted by £15.4m for unbudgeted PLC Consulting consideration and exceptional cash items. The adjusted net debt performance at £(58.0)m is below the lower threshold of £(51.4)m and therefore no bonus is payable in respect of Group net debt.

The Committee carried out a detailed and rigorous review of the achievement of personal objectives and determined that these had been achieved at a level of 86.5% for the Chief Executive Officer and 85% for the Chief Financial Officer. Achievement against the targets set by the Committee for the Chief Strategy Officer were not reviewed as, following his resignation, he is not eligible for a performance-related bonus for FY 2019/20.

Notwithstanding the above high level of achievement against the personal objectives by the Chief Executive Officer and the Chief Financial Officer, the Committee decided that:

- in light of the failure to achieve threshold levels of performance against both the profit and net debt measures; and
- after taking into account the overall performance of the Group during the year and the ongoing impact of the COVID-19 crisis, no bonuses would be paid to the Executive Directors in respect of FY 2019/20.

Given the above decision, no deferred bonus awards will be made under the Deferred Bonus Plan ('DBP') in respect of the year to 30 June 2020.

#### Long-term incentive awards vesting during the financial year (audited)

Awards under the LTIP and bonus-linked awards under the DBP made in October 2016 lapsed in October 2019 on the basis of underlying EPS and TSR performance measured over specified periods, the last of which ended in October 2019. For the avoidance of doubt, the Committee did not exercise any discretions in relation to these awards.

The performance conditions applicable to these awards are summarised below:

Relative TSR portion (50%)		Underlying EPS growth portion (50%)	
Relative TSR performance against the FTSE Small Cap (exc. financial services companies and investment trusts)		Underlying EPS growth performance	
	Vesting level (%)		Vesting level (%)
Below median	-	Less than RPI + 3% p.a.	-
Median	25	RPI + 3% p.a.	25
Upper quartile (or above)	100	RPI + 10% p.a.	100
Between median and upper quartile	Sliding scale between the above percentages	Between RPI + 3% and RPI + 10% p.a.	Sliding scale between the above percentages

Over the three-year performance period, Ricardo was ranked below the median of the TSR comparator group, giving a zero vesting level for this portion of the award. Ricardo's TSR over the period was (31.2)% against a median of 7.2%. The underlying EPS figure for the year resulted from growth of (12.4)% in real terms with the result that the underlying EPS target was not achieved. Therefore, the overall vesting level for this award was zero and the shares under the awards lapsed in full.

The number of shares which lapsed in October 2019 in respect of awards granted to each of the Executive Directors in October 2016 are set out on pages 114 and 115 of this report.

## Detailed breakdown of pay in FY 2019/20 (continued)

### The Chair's and the Non-Executive Directors' fees

The Chair's and the Non-Executive Directors' fees as of 1 January 2020 are as follows:

	£'000
Chair's fee	159
<i>Non-Executive Directors' fees:</i>	
Basic fee	51
Additional fee for Audit and Remuneration Committee Chairs	9
Additional fee for the Senior Independent Director	8

The above table reflects a 3% increase in the Chair's fee and a 3% increase in the basic fee for Non-Executive Directors, Committee Chair fee and Senior Independent Director fee relative to the prior year.

### Payments to past directors and in respect of loss of office (audited)

No payments have been made to past directors of the Company or in respect of loss of office in the financial year.

### Long-term incentive awards granted during the financial year (audited)

Awards were made to the Executive Directors under the DBP (bonus-linked shares) and LTIP in October 2019. The awards granted to each Executive Director were as follows:

#### Deferred Bonus Plan

	CEO David Shemmans	CFO Ian Gibson	CSO Mark Garrett
Type awarded	Performance shares (bonus-linked shares) <sup>(1)</sup>		
Basis for award	1:1 match for corresponding Deferred Award		
Date of award	24 October 2019		
Number of shares	12,969	6,844	4,963
Share price <sup>(2)</sup> (£)	6.236	6.236	6.236
Face value of award (£)	80,875	42,679	30,949
Vesting level for achievement of threshold performance (%)	25	25	25
End of performance period	35 days after release of preliminary results announcement for FY 2021/22 (expected to be October 2022)		

(1) As the bonus-linked shares are granted in the form of performance share awards, no 'exercise price' is payable in order to receive any vested shares. This position has not changed since the awards were granted.

(2) Average of the share prices over the five days up to and including 23 October 2019.

#### Long Term Incentive Plan

	CEO David Shemmans	CFO Ian Gibson	CSO Mark Garrett
Type awarded	Performance shares <sup>(1)</sup>		
Basis for award (% of base salary)	100	55	55
Date of award	24 October 2019		
Number of shares	82,590	29,526	25,396
Share price <sup>(2)</sup> (£)	6.236	6.236	6.236
Face value of award (£)	515,031	184,124	158,369
Vesting level for achievement of threshold performance (%)	25	25	25
End of performance period	35 days after release of preliminary results announcement for FY 2021/22 (expected to be October 2022)		

(1) As the LTIP awards are granted in the form of performance share awards, no 'exercise price' is payable in order to receive any vested shares. This position has not changed since the awards were granted.

(2) Average of the share prices over the five days up to and including 23 October 2019.



## Detailed breakdown of pay in FY 2019/20 (continued)

### Long-term incentive awards granted during the financial year (audited) (continued)

The vesting of these awards will be based on Ricardo's underlying EPS growth (two-thirds) and three-year relative TSR (one-third) performance summarised in the table below. The relative TSR measure was chosen by the Committee to link the remuneration of Executive Directors to the performance experienced by shareholders and further align their interests. The underlying EPS measure was chosen to reward sustained profit growth and align with one of our key performance indicators. In addition, no part of an award will vest unless the Committee is satisfied that the achievement against the TSR and underlying EPS performance conditions is a genuine reflection of the underlying performance of the Group over the performance period.

The Committee decided to tilt the balance away from an equal weighting between TSR and underlying EPS growth to signal the importance of increasing Ricardo's profitability as measured by underlying EPS and to give the management team a stronger incentive to drive profitable performance which should in turn lead to increased shareholder value.

Relative TSR portion (one-third)		Underlying EPS growth portion (two-thirds)	
Relative TSR performance against the FTSE Small Cap (excl. financial services companies and investment trusts)		Adjusted underlying EPS for the final year in the performance period (FY 2021/22)	
	Vesting level (%)		Vesting level (%)
Below median	-	Less than 60.1p	-
Median	25	60.1p	25
Upper quartile (or above)	100	Equal to or greater than 69.1p	100
Between median and upper quartile	Sliding scale between the above percentages	Between 60.1p and 69.1p	Sliding scale between the above percentages

### Performance target setting and those applying to awards outstanding during FY 2019/20

As shown in previous Directors' Remuneration Reports, the Committee has a track record of setting stretching underlying EPS targets which are carefully calibrated to deliver maximum pay-outs only where Ricardo has outperformed the business plan and market expectations. Full vesting of the shares linked to relative TSR performance only occurs where Ricardo's performance is in the upper quartile of the FTSE Small Cap Index (excluding financial services companies and investment trusts).

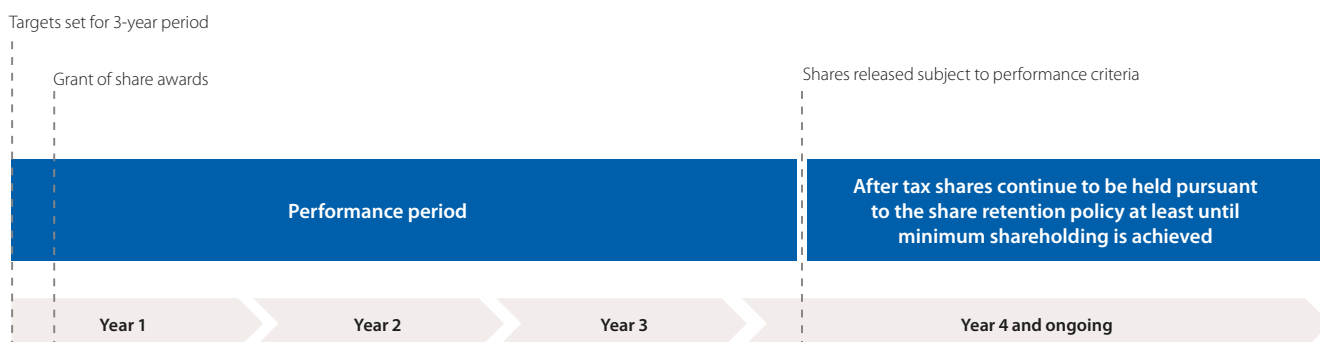
The performance targets applicable to outstanding LTIP and bonus-linked share awards are as follows: For awards in the year ended 30 June 2017, maximum vesting of the underlying EPS portion required growth of RPI + 10% per annum. The underlying EPS target to achieve threshold vesting for awards granted in the year ended 30 June 2017 required performance in excess of RPI + 3% per annum.

As explained in the Directors' Remuneration Report in the *Annual Report and Accounts 2017*, for awards granted in the year ended 30 June 2018, the Committee decided to move away from expressing our targets as growth percentages in excess of RPI. The reason for this change was to simplify and enhance the 'line of sight' for participants and also to recognise the international scope of Ricardo. The underlying EPS target to achieve threshold vesting for awards granted in the year ended 30 June 2018 required underlying EPS of at least 65 pence and maximum vesting required underlying EPS of at least 75 pence. The underlying EPS target to achieve threshold vesting for awards granted in the year ended 30 June 2019 required underlying EPS of at least 60 pence and maximum vesting required underlying EPS of at least 69 pence.

The performance condition applicable to the TSR portion of awards has remained constant through this period and is the same as set out above for awards granted in the year ended 30 June 2020. The number and value of shares which were awarded to each of the Executive Directors in the year ended 30 June 2020 are set out in the tables on page 112.

## Directors' interests in shares provisionally awarded under the LTIP (audited)

The following chart sets out in graphical form how the Company's LTIP was operated in FY 2019/20 and earlier years:



For details of the share retention policy, see page 116.

As at 30 June 2020, the Directors' interests in shares provisionally awarded under the LTIP were as follows:

	3-year cycle ending	Award date <sup>(1)</sup>	Share price at award date in pence	At 1 July 2019	Number of provisional shares			At 30 June 2020 <sup>(3)</sup>	Vesting date
					Awarded <sup>(2)</sup>	Lapsed	Vested		
<b>Dave Shemmans (CEO)</b>	2019	Oct 16	954.30	48,915	-	(48,915)	-	25/10/2019	
	2020	Nov 17	830.00	57,927	-	-	57,927	08/11/2020	
	2021	Oct 18	756.00	66,141	-	-	66,141	25/10/2021	
	2022	Oct 19	623.60	-	82,590	-	-	82,590	24/10/2022
<b>Ian Gibson (CFO)</b>	2019	Oct 16	954.30	17,318	-	(17,318)	-	25/10/2019	
	2020	Nov 17	830.00	20,510	-	-	20,510	08/11/2020	
	2021	Oct 18	756.00	23,418	-	-	23,418	25/10/2021	
	2022	Oct 19	623.60	-	29,526	-	-	29,526	24/10/2022
<b>Mark Garrett<sup>(4)</sup> (CSO)</b>	2019	Oct 16	954.30	15,114	-	(15,114)	-	25/10/2019	
	2020	Nov 17	830.00	17,899	-	-	17,899	08/11/2020	
	2021	Oct 18	756.00	20,437	-	-	20,437	25/10/2021	
	2022	Oct 19	623.60	-	25,396	-	-	25,396	24/10/2022

(1) Awards made under the rules of the Ricardo plc 2014 Long Term Incentive Plan; performance conditions as outlined on page 113.

(2) The face value at the date of grant of the awards made in October 2019 was £515,031 for Dave Shemmans; £184,124 for Ian Gibson; and £158,369 for Mark Garrett.

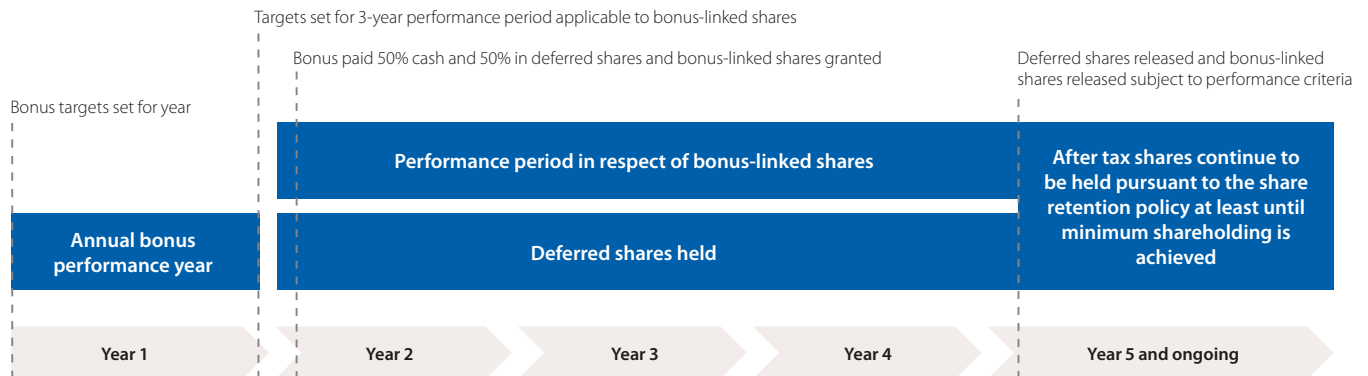
(3) The mid-market closing price of the Company's shares on 30 June 2020 was 419.0p per share (2019: 760.0p).

(4) All LTIP awards held by Mark Garrett subsequently lapsed in full on 31 July 2020, being the date he ceased employment with the Group.

The October 2016 awards that were due to vest in October 2019 lapsed in full because the performance conditions as set out on page 113 were not satisfied.

## Directors' interests in shares provisionally awarded under the DBP (audited)

The following chart sets out in graphical form how the DBP was operated in FY 2019/20 and earlier years:



For details of the share retention policy, see page 116.

As at 30 June 2020, the Directors' interests in shares provisionally awarded under the DBP were as follows:

	Type of Award	Award date	Deferral / performance period	Share price at award date in pence	Number of provisional shares					
					At 1 July 2019	Awarded <sup>(1)</sup>	Dividend shares <sup>(2)</sup>	Lapsed	Vested	At 30 June 2020 <sup>(3)</sup>
<b>Dave Shemmans (CEO)</b>	Deferred	Oct 16	3 years	954.30	20,762	-	-	-	(20,762)	-
	Bonus-linked shares <sup>(4)</sup>	Oct 16	3 years	954.30	19,336	-	-	(19,336)	-	-
	Deferred	Oct 18	3 years	756.00	18,090	-	731	-	-	18,821
	Bonus-linked shares <sup>(4)</sup>	Oct 18	3 years	756.00	17,568	-	-	-	-	17,568
	Deferred	Oct 19	3 years	623.60	-	12,969	523	-	-	13,492
	Bonus-linked shares <sup>(4)</sup>	Oct 19	3 years	623.60	-	12,969	-	-	-	12,969
<b>Ian Gibson (CFO)</b>	Deferred	Oct 16	3 years	954.30	10,311	-	-	-	(10,311)	-
	Bonus-linked shares <sup>(4)</sup>	Oct 16	3 years	954.30	9,604	-	-	(9,604)	-	-
	Deferred	Oct 18	3 years	756.00	9,974	-	403	-	-	10,377
	Bonus-linked shares <sup>(4)</sup>	Oct 18	3 years	756.00	9,686	-	-	-	-	9,686
	Deferred	Oct 19	3 years	623.60	-	6,844	276	-	-	7,120
	Bonus-linked shares <sup>(4)</sup>	Oct 19	3 years	623.60	-	6,844	-	-	-	6,844
<b>Mark Garrett<sup>(5)</sup> (CSO)</b>	Deferred	Oct 16	3 years	954.30	8,850	-	-	-	(8,850)	-
	Bonus-linked shares <sup>(4)</sup>	Oct 16	3 years	954.30	8,244	-	-	(8,244)	-	-
	Deferred	Oct 18	3 years	756.00	6,097	-	245	-	-	6,342
	Bonus-linked shares <sup>(4)</sup>	Oct 18	3 years	756.00	5,922	-	-	-	-	5,922
	Deferred	Oct 19	3 years	623.60	-	4,963	200	-	-	5,163
	Bonus-linked shares <sup>(4)</sup>	Oct 19	3 years	623.60	-	4,963	-	-	-	4,963

(1) The face values at the date of grant of awards made in October 2019 were Dave Shemmans: £80,875; Ian Gibson: £42,679; Mark Garrett: £30,949.

(2) Amounts allocated include shares equivalent to dividends on provisional deferred award shares and vested bonus-linked shares.

(3) The mid-market closing price of the Company's shares on 30 June 2020 was 419.0p (2019: 760.0p).

(4) Bonus-linked shares awarded under the rules of the Ricardo plc 2011 Deferred Bonus Plan; performance conditions as outlined on page 113

(5) All DBP awards held by Mark Garrett subsequently lapsed in full on 31 July 2020, being the date he ceased employment with the Group.

The values of the October 2016 Deferred awards vesting were £134,953 for Dave Shemmans; £67,022 for Ian Gibson; and £57,525 for Mark Garrett. The market price per share of the shares that vested on 25 October 2019 was 650.0p.

The October 2016 bonus-linked shares that were due to vest in October 2019 lapsed in full because the performance conditions set out on page 113 were not satisfied.



## Share retention policy

### Current policy

In order to foster greater alignment between our Executive Directors and our shareholders, the Board currently operates a share retention policy for the Executive Directors with the intention that each Executive Director will own shares in the Company with a value at least equal to one times annual base salary with a requirement that vested incentive awards (net of tax) are held until this is met. While each of the Executive Directors met this target during the year, the impact of COVID-19 on UK share prices has meant that the requirement was not met as at 30 June 2020, as shown in the table below.

### Future policy – in post

As part of the package of changes to the Directors' Remuneration Policy proposed for adoption by shareholders at the 2020 AGM, the Committee has reviewed the above share retention policy and proposes to revise this as soon as the new policy comes into force. In particular, the holding requirement will be increased from one times annual base salary to two times annual base salary. Until such increased holding requirement has been reached Executive Directors will be required to retain at least 50% of any vested shares (net of tax) from the Company's discretionary share plans. In line with the Investment Association's Principles of Remuneration 2019, vested shares subject to a holding period (i.e. vested LTIP awards under the new 2020 LTIP) and unvested shares that are not subject to performance conditions (i.e. DBP awards) will count towards this shareholding requirement on a net-of-tax basis.

### Future policy – post-cessation

The above new retention requirement will continue post-cessation of employment with shares worth two times annual base salary (or, if lower, the shareholding as at the date of cessation) to be held for the initial 12 month period and half of this amount required to be held for the second 12 month period. This will apply to share plan awards granted after the new policy has been approved by shareholders. The Committee thinks the suggested approach is appropriate for Ricardo as it is being introduced at the same time as the in-post shareholding guideline is being increased. The guideline level for the second-year post-cessation will therefore be equal to the current in-post level of one times salary.

### Directors' shareholdings (audited)

The interests of Directors and their connected persons in ordinary shares as at 30 June 2020, including any shares provisionally awarded under the LTIP and DBP are presented in the table below. At 9 September 2020, the interests in shares of the Directors who were still in office were unchanged from those at 30 June 2020.

	No. of shares held	Share awards not subject to performance conditions <sup>(1)</sup>	Share awards subject to performance conditions <sup>(2)</sup>	Shareholding (% of base salary) <sup>(3)</sup>
<b>EXECUTIVE DIRECTORS</b>				
Dave Shemmans (CEO)	101,085	32,313	237,195	80
Ian Gibson (CFO)	47,827	17,497	89,984	58
Mark Garrett (CSO) <sup>(4)</sup>	59,723	11,505	74,617	84
<b>NON-EXECUTIVE DIRECTORS</b>				
Sir Terry Morgan CBE	15,000	-	-	-
Russell King <sup>(5)</sup>	-	-	-	-
Laurie Bowen	6,000	-	-	-
Malin Persson	1,500	-	-	-
Bill Spencer	8,000	-	-	-
Jack Boyer <sup>(6)</sup>	-	-	-	-
Peter Gilchrist <sup>(7)</sup>	4,970	-	-	-

(1) Deferred awards granted pursuant to the rules of the Ricardo plc 2011 Deferred Bonus Plan.

(2) Bonus-linked awards granted pursuant to the rules of the Ricardo plc 2011 Deferred Bonus Plan and LTIP awards granted pursuant to the rules of the Ricardo plc 2014 Long Term Incentive Plan.

(3) For Executive Directors only (i.e. those who are subject to the share retention policy). Calculated by reference to the number of beneficially owned shares, a share price of 419.0p per share (2019: 760.0p) and salaries as at 30 June 2020.

(4) All DBP and LTIP awards held by Mark Garrett lapsed in full on 31 July 2020, being the date he ceased employment with the Group.

(5) Russell King was appointed as a Director on 5 September 2019.

(6) Jack Boyer was appointed as a Director on 5 September 2019.

(7) Shareholding as at 14 November 2019, being the date that Peter Gilchrist retired as Director.

### Dilution limits

The number of shares that may be issued under all Ricardo employee share plans in any ten-year rolling period will be restricted to 10% of the issued ordinary share capital of the Company and 5% of the issued ordinary share capital of the Company for discretionary employee share plans.

At the end of the year under review, the Company's overall dilution was 4.56%, of which 4.12% related to discretionary employee share plans. The Company operates an employee benefit trust which has principally been used to facilitate the operation of the LTIP and DBP arrangements. Any new shares issued to the trust are, however, included in the dilution limits noted above.

### Executive Directors and their Board positions with other companies during FY 2019/20

Executive Directors may, with the prior consent of the Board, hold a non-executive directorship with another company.

On 1 September 2014, the Company's Chief Executive Officer was appointed as a non-executive director of Sutton and East Surrey Water plc. He is permitted to retain the associated fees which, for the year from 1 July 2019 to 30 June 2020 (inclusive), amounted to £35,444.

On 25 November 2016, the Company's Chief Strategy Officer was appointed as the non-executive Chair of Secured By Design Limited. He is permitted to retain the associated fees which, for the year from 1 July 2019 to 30 June 2020 (inclusive), amounted to £21,000.

### Implementation of Directors' Remuneration Policy in FY 2020/21

It is anticipated that the implementation of the 2020 Directors Remuneration Policy (the '2020 Policy') will be similar to the implementation of the applicable policy in FY 2019/20.

The Committee will:

- Review base salary levels for the Executive Directors with effect from 1 January 2021;
- Set and review the performance targets for the FY 2020/21 annual bonus and the LTIP awards to be made in 2020 to ensure continued alignment to strategy; and
- Make awards under the new Ricardo plc 2020 Long Term Incentive Plan (the '2020 LTIP'), subject to shareholders' approval at the 2020 AGM.

As no bonus was payable to employees across the Group in FY 2019/20, including to the Chief Executive Officer and Chief Financial Officer, the Committee will not make any awards under the DBP during the year.

### Annual Bonus

For the FY 2020/21 annual bonus, a cash conversion measure replaces net debt and the weightings of measures are being harmonised across all the Executive Directors. The maximum annual performance-related bonus opportunity will be 125% of salary for the Chief Executive Officer and 100% of the salary for any other Executive Director.

To determine the amount of bonus payable for the year, the Committee will assess the level of achievement against the financial measures and targets set in respect of:

- Group underlying profit before tax (60%);
- Cash conversion (20%); and
- The achievement of specified individual objectives (20%).

The cash conversion measure is being introduced as it is regarded as a key and more effective indicator of ongoing operational cash efficiency.

The proposal for the cash measure for bonus purposes in respect of the year ending 30 June 2021 is a cash conversion percentage. Cash conversion is defined as underlying cash generated from operations (excluding defined benefit pension scheme payments) divided by underlying EBITDA. "Underlying" excludes specific adjusting items, which comprise amortisation of acquired intangible assets, acquisition-related expenditure and reorganisation costs.

On-target performance (50% pay-out) will be set at the budgeted cash conversion, i.e. budgeted underlying cash from operations ÷ budgeted underlying EBITDA. The current intention is for cash conversion to be calculated from budgeted performance calculated to give the threshold and maximum cash conversions.

Owing to concerns about commercial sensitivity, we do not believe it is in shareholders' interests to disclose any further details of these targets on a prospective basis. However, the Company is committed to adhering to principles of transparency and will, provided disclosure of targets is not deemed to be commercially sensitive, make appropriate and relevant levels of disclosure of bonus targets and performance against these targets for the FY 2020/21 bonus in next year's report.

## 2020 LTIP Awards

### Introduction

Subject to receipt of the necessary shareholder approvals, it is anticipated that awards will be granted under the new 2020 LTIP shortly after the conclusion of the 2020 AGM. The 2020 LTIP is substantially the same as the existing arrangement that was adopted in 2014, with any changes mainly intended to ensure alignment with the 2020 Policy and current best practice requirements. In particular, the 2020 LTIP includes a new two year holding period that will apply following the vesting of awards and incorporates an increase to the maximum levels of award (to 150% of base salary for the Chief Executive Officer and 130% of base salary for any other Executive Director).

### Quantum of awards

The quantum of the initial awards under the 2020 LTIP will be determined by the Committee at or around the time they are granted. Any such determination will be subject to the maximum award limits described above and will also take into account a range of other factors including the Company's share price at the time of grant and the overall performance of the business.

### Performance measures and targets

The Committee believes that TSR and underlying EPS continue to be appropriate measures for the Company's long-term incentive arrangements as they are strongly aligned to shareholder value creation. In FY 2019/20, the Committee moved away from an equal weighting of these measures in order to provide additional focus on Ricardo's profitable performance and determined that:

- one-third of the relevant shares will be subject to the relative TSR measure; and
- the remaining two-thirds of the relevant shares will be subject to the underlying EPS measure.

The Committee has determined that these weightings should also apply to the LTIP awards to be granted in FY 2020/21.

The targets applicable to the TSR portion of these awards will be the same as those which applied to awards granted last year. Threshold performance (i.e. median ranking in the comparator group, for which 25% of this portion will vest) is generally intended to align to the anticipated performance of the relevant market and our competitors. If the maximum performance is achieved (i.e. upper quartile ranking in the comparator group), we would expect to have significantly outperformed the relevant market and our competitors.

As noted in the Chair's Overview, the Committee has concluded that, in light of the current uncertainty created by the COVID-19 crisis, it would be inappropriate to set the specific targets for the EPS portion of the FY 2020/21 awards until such time as there is greater clarity around the long-term impact of the pandemic on the Company's business and the various markets in which it operates. As a result, the Committee intends to finalise these targets no later than six months after the date on which the awards are granted. Once it has done so, full details of the selected measures will be set out in an RNS announcement released to the market.

It should also be noted that, in terms of the 2020 Policy, the Committee will have the ability to adjust the formulaic outcomes from performance conditions where appropriate and the Committee will ensure that outcomes reflect Company and executive performance as well as the experience of shareholders and other stakeholders. The Committee will also use its discretion to reduce vesting outcomes where it determines that windfall gains have been received.

### Other points

The Committee considered, and will continue to consider, the impact on the Company's incentive arrangements of the introduction of IFRS 15 *Revenue from Contracts with Customers* on 1 July 2018 and IFRS 16 *Leases* on 1 July 2019. It will make any adjustments when assessing the performance outcomes to outstanding long-term incentive awards to ensure that performance measurements are carried out on a like for like basis and are fair to both shareholders and plan participants.



## PART 3 – DIRECTORS' REMUNERATION POLICY Introduction

This part of the Directors' Remuneration Report provides an overview of the Company's policy on Directors' pay that is designed to align with and support Ricardo's strategic plan and will operate over the three years from the AGM to be held on 12 November 2020 (the '2020 AGM') until the AGM to be held in 2023 (the '2020 Policy'). The previous policy that was approved by shareholders at the AGM held on 8 November 2017 (the '2017 Policy') will continue to operate until the 2020 AGM and indeed the new policy will permit the execution of remuneration arrangements that were agreed when the 2017 Policy was in effect. The 2017 Policy applied throughout the financial year ended 30 June 2020 and was most recently reproduced in the *Annual Report and Accounts 2019* with the originally approved text being included in the *Annual Report and Accounts 2017*, both of which are available on our website at: [www.ricardo.com](http://www.ricardo.com).

In accordance with the requirements of the Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) (the 'Regulations'), the 2020 Policy will be subject to a binding vote at the 2020 AGM and will take effect immediately upon receipt of such approval from shareholders.

As discussed in the Chair's Overview, following a thorough and careful review of the structure of the 2017 Policy, its operation in our business (including in the context of the pay and employment conditions of employees (other than Directors)) and the views of our largest shareholders, their industry bodies and other corporate governance commentators, the Committee concluded that a number of changes should be made to the 2017 Policy in order to improve its ability to support Ricardo at this stage of our development. Details of the changes to the 2017 Policy are set out on page 120.

### The Remuneration Committee – what we do

The Committee's primary purpose is to make recommendations to the Board on the Group's framework or broad policy for executive remuneration. The Board has also delegated responsibility to the Committee for determining the remuneration, benefits and contractual arrangements of the Chair and the Executive Directors. No individual is involved in deciding his or her remuneration.

The Committee has written terms of reference, which are available at [www.ricardo.com](http://www.ricardo.com), and its responsibilities include:

- Determining and agreeing with the Board the policy for executive remuneration and monitoring and considering the policy for, and structure of, senior management remuneration taking into account that the ultimate decision-making responsibility for the remuneration of the senior management team (other than the Executive Directors) lies with the Chief Executive Officer;
- Agreeing the terms and conditions of employment for Executive Directors, including their individual annual remuneration and pension arrangements, and reviewing such provisions for senior management;
- Agreeing the measures and targets for any performance-related bonus and employee share plans;
- Agreeing the remuneration of the Chair of the Board;
- Ensuring that, on termination, contractual terms and payments made are fair, both to the Company and the individual, so that failure is not rewarded and the duty to mitigate loss is recognised wherever possible; and
- Agreeing the terms of reference of any remuneration advisors it appoints.

### Taking shareholders' views into account

When considering Ricardo's remuneration policy and its implementation, the Committee is always keen to ensure that it takes into account the views and opinions of all the relevant stakeholders in the business. In particular, when preparing its policy for approval at the 2020 AGM, the Committee undertook a programme of engagement with the Company's largest institutional investors and their representative bodies in order to better understand their perspective on our previous pay practices and the proposed policy for 2020-2023. Shareholders were given an early opportunity to provide feedback and in finalising the proposals this was taken into account. As a result of the feedback received through this consultation programme:

- Incumbent Executive Directors will be aligned to the pension provision levels of the UK workforce by 1 January 2022 (in addition to any new appointees being capped at this level from the date of joining) – further details are included in the 2020 Policy table on page 121;
- One-third of any bonus paid will be deferred into shares for three years; and
- Extension of share ownership guideline to two years' post-cessation of employment (reducing from two times salary in the first year to one times salary in the second year).

In the spirit of continuous improvement and in order to ensure that our remuneration policy continues fully to support achievement of business objectives and delivery of value to shareholders, the Committee will continue to review our policy periodically in the context of the changing business environment. Any material future changes to policy will be discussed with shareholders in advance.

### Consideration of employment conditions elsewhere in the Company

While Ricardo does not consult directly with employees on the subject of Directors' remuneration, the remuneration packages for each Executive Director and their fixed and variable elements are reviewed annually. This process (and the setting of the revised remuneration policy as a whole) takes into account a number of factors, including the following:

- Individual and business performance;
- Pay arrangements for similar roles in other companies and consultancy organisations of Ricardo's size, complexity and international reach;
- Risk management; and
- Pay and employment conditions of employees of the Group.

The Committee also looks at the differential between the Chief Executive Officer's pay and Ricardo average employee earnings over time.

## Overview of Ricardo's remuneration policy for 2020 – 2023

The objective of Ricardo's executive remuneration policy is to support the business strategy and timescales of an international consultancy business by not only rewarding the standard of performance and the outcomes that our shareholders require, but also encouraging share ownership and fostering alignment of interest between the Executive Directors and shareholders. We do this by setting base levels of salaries that are competitive, compared with companies of similar size and complexity to Ricardo, and providing other remuneration package elements, namely the short-term annual bonus plan and long-term incentive arrangement, that only pay for performance. Taken together, our two variable pay platforms focus on growing the profitability of the business, its resilience, the achievement of discrete non-financial targets and linking executive outcomes with the shareholder experience both by delivering rewards in the form of Ricardo shares and also by using a relative total shareholder return performance measure over the longer term.

### Changes to the 2017 Directors' Remuneration Policy

The changes to the 2017 Directors' Remuneration Policy are as follows:

- Pension provision for new joiners and incumbents alike will be aligned with the UK workforce;
- One third of any bonus will be deferred into shares and ordinarily delivered at the expiry of a three year period from grant;
- To simplify our long-term incentive arrangements, the ability to receive bonus-linked shares is being removed and the limits under the LTIP are being increased in order to compensate;
- A two-year post vesting holding period under the LTIP is being introduced for future grants to Executive Directors; and
- A 200% share ownership requirement for all Executive Directors is being introduced with a requirement that 50% of any gains from any share awards (vesting of LTIP or deferred bonus) be retained until the increased level is met. This will continue post-cessation of employment for two years (with the holding requirement reducing by 50% for the second year).

### Overview of the decision making process that was followed for the determination of the new policy

As explained in the Chair's introduction on page 102, the new 2020 Policy which shareholders are being asked to approve at the 2020 AGM was developed by the Remuneration Committee following a thorough review of the existing executive remuneration arrangements; it also involved the Committee undertaking a consultation exercise with our major shareholders and the Chief Executive Officer and Chief Financial Officer.

In its deliberations, the Committee received support and advice from FIT Remuneration Consultants and Shepherd and Wedderburn, its independent external advisors (see page 105 for details).

Although the Executive Directors provided the Committee with a level of input in relation to the formulation of the new policy, the final decisions around its structure were taken by the Committee alone in order to avoid any conflicts of interest arising.

## Corporate Governance

When determining the 2020 Policy, the Committee was mindful of its obligations under Provision 40 of the Corporate Governance Code to ensure that the policy and other remuneration practices were clear, simple, predictable, proportionate, safeguarded the reputation of the Company and were aligned to Company culture and strategy. Set out below are examples of how the Committee addressed these factors:

### Clarity

- Remuneration policy and arrangements are clearly disclosed each year in the Annual Report.
- The Company invited its principal shareholders and shareholder representative groups to consult on the updated remuneration policy and received good feedback. Changes were made to the proposals following input from this process.
- The Committee is regularly updated on workforce pay and benefits across the Group during the course of its activity.

### Simplicity

- Our remuneration structure is comprised of fixed and variable remuneration, with the performance conditions for variable elements clearly communicated to, and understood by, participants in order to ensure they are effective.
- The proposed 2020 Policy has received positive feedback from stakeholders in relation to its simplicity. The bonus-linked shares have been removed to result in a simpler structure.

### Risk

- The rules of the 2020 LTIP provide discretion to the Committee to reduce award levels and awards are subject to malus and clawback provisions.
- The total pay of the Executive Directors is considered by the Committee as well as pay ratios with the wider workforce and shareholder returns.

### Predictability

- The range of possible rewards for the Executive Directors is considered in the scenario chart on page 125.
- The Committee has a range of discretions in relation to variable pay awards, new joiner and leavers which are identified and explained in the Remuneration Policy section.

### Proportionality

- As shown in the scenario chart on page 125, variable performance-related elements represent a significant proportion of the total remuneration opportunity for our Executive Directors.
- The Committee considers the appropriate financial and personal performance measures each year to ensure that there is a clear link to strategy. For example, for FY 2020/21 the cash conversion measure is being introduced under the annual bonus.
- Discretions are available to the Committee to reduce awards if necessary to ensure that outcomes do not reward poor performance.

### Alignment to culture

- The Committee remain confident that the incentive schemes operated under the Remuneration Policy are aligned with the Company's purpose, values and strategy.
- The use of metrics in both the annual bonus and LTIP measure how we perform against our financial and non-financial KPIs.

THE STRUCTURE OF OUR DIRECTORS' REMUNERATION PACKAGE – THE POLICY TABLE

Pay element and link to strategy	Maximum	Operation	Framework for assessing performance
<p><b>Base salary</b> <i>To provide a core level of remuneration to enable the Company to attract and retain skilled, high-calibre executives to deliver its strategy.</i></p>	<p>Base salary increases will not ordinarily be more than 10% p.a. with exceptional increases over the normal maximum limit capped at 25% p.a.</p> <p>However, generally speaking, increases will be in line with salary increases for employees across the Group.</p>	<p>Salary levels are reviewed annually in January each year.</p> <p>Pay is set by considering:</p> <ul style="list-style-type: none"> <li>• Market levels of total pay for comparable roles in companies of similar size, complexity and sector;</li> <li>• Each individual Director's experience, scope of responsibilities and performance; and</li> <li>• The salary increases for employees across the Group.</li> </ul> <p>Ricardo places a strong emphasis on internal succession planning. This emphasis may mean that talented individuals are promoted rapidly. In such circumstances, the Committee's policy is to set a relatively low base salary initially and then increase this to a market competitive level for the role over time. This may mean relatively high annual salary increases as the individual gains experience in the new role. We will notify shareholders where this is the case.</p>	None
<p><b>Other benefits</b> <i>To provide market-competitive benefits.</i></p>	<p>The total value of benefits will not exceed 10% of base salary p.a., save in the case of relocation.</p>	<p>The Company provides other cash benefits and benefits in kind to Executive Directors in line with market practice. These include a company car or cash alternative, private fuel, private medical insurance, life assurance and permanent health and disability insurance. The benefits arrangements are reviewed on an annual basis.</p> <p>The Committee reserves the right to provide further benefits where this is appropriate in the individual's particular circumstances (for example, costs associated with relocation as a result of the Director's role with the Company).</p> <p>Certain other employees are eligible for the same or similar benefits described above depending on their role, seniority and geographical location.</p>	None
<p><b>Pension</b> <i>To offer market-competitive retirement benefits.</i></p>	<p>Until 31 December 2021 the maximum pension contribution is 20% of salary over the Lower Earnings Limit. From 1 January 2022 this reduces to match the pension provision level of the UK workforce from time to time (currently 7%).</p> <p>In addition, in line with payments given to all employees who were previous members of the old defined benefit scheme operated by the Company, the current Chief Executive Officer is entitled to an additional 1.2% of salary pension contribution. This will continue throughout the 2020 Policy period.</p>	<p>The Company operates a defined contribution scheme, the Ricardo International Pension Scheme ('RIPS'). The policy for Executive Directors (save for the Chief Executive Officer's legacy pension arrangements described opposite) continues to be a pension contribution of 20% of base salary over the Lower Earnings Limit. From 1 January 2022 (again, save for the Chief Executive Officer's additional 1.2% legacy entitlement), this will be aligned with the pension provision levels of the UK workforce from time to time (currently 7%). To the extent that any contributions have used up the adjusted annual allowance limit, any additional payment will be cash in lieu of pension.</p> <p>Executive Directors may only choose to opt out of the RIPS where they are close to or have exceeded the pension lifetime allowance and have applied for fixed protection from HMRC. Under such circumstances, Executive Directors will receive a cash payment in lieu of pension.</p> <p>On death in service, all Executive Directors, subject to the medical requirements of the insurance company, are entitled to a lump sum of four times annual salary at date of death.</p> <p>Early retirement is available with the consent of the Company and the pension scheme trustees if the individual is over 55 or retiring due to ill health.</p> <p>All UK employees are entitled to receive Company pension contributions. While levels vary, the majority of UK employees receive a 7% of salary employer pension contribution into the RIPS.</p> <p>For new Executive Director appointments regardless of appointment date, pension contribution will be aligned with the contribution available to the wider workforce.</p>	None



THE STRUCTURE OF OUR DIRECTORS' REMUNERATION PACKAGE – THE POLICY TABLE (continued)

Pay element and link to strategy	Maximum	Operation	Framework for assessing performance
<p><b>Pay for performance: Annual bonus</b></p> <p><i>To reward the annual delivery of financial and operational targets.</i></p>	<p>Maximum opportunity of 125% of base salary for the Chief Executive Officer and 100% of base salary for other Executive Directors.</p>	<p><b>Bonuses are awarded by reference to performance against specific targets measured over a single financial year.</b></p> <p>Two thirds of any bonus paid to an Executive Director will be paid out in cash shortly after the assessment of the performance targets has been completed. The remaining one third of the bonus will be compulsorily deferred into ordinary shares, the vesting of which is normally subject to continued employment for a three-year period from the award date. The cash element of the bonus is not payable unless the individual remains in employment at the payment date.</p> <p>The principal purpose of this bonus deferral mechanism is to:</p> <ul style="list-style-type: none"> <li>• Provide for further alignment of executives' and shareholders' interests;</li> <li>• Provide an additional retention element; and</li> <li>• Encourage Executive Directors to build up a shareholding in accordance with our share retention policy.</li> </ul> <p>Dividends and dividend equivalents for each deferral period may also be paid in respect of shares under award to the extent that shares have vested in the relevant participants.</p> <p>Bonus arrangements exist for certain other employees throughout the Group on terms that are applicable to their role, seniority and geographical location, although typically at lower levels of maximum opportunity to reflect that a greater proportion of Executive Directors' remuneration is performance-based.</p> <p><b>Malus and clawback:</b> Annual bonuses (including any element deferred into shares) may be subject to malus and clawback provisions if certain events occur in the period of three years from the end of the financial year to which they relate. These events include the Committee becoming aware of:</p> <ul style="list-style-type: none"> <li>• A material misstatement of the Company's financial results;</li> <li>• An error in the calculation of performance conditions; or</li> <li>• An act committed by the relevant participant that could have resulted in summary dismissal by reason of gross misconduct or which has caused significant reputational damage to the Group.</li> </ul> <p>The mechanism through which malus and clawback can be implemented enables the Committee to take various actions including:</p> <ul style="list-style-type: none"> <li>• Reducing outstanding incentive awards; and</li> <li>• Requiring a cash payment to be made by participants.</li> </ul>	<p>The measures and targets applicable to the annual bonus scheme (and the different weightings ascribed to them) are set annually by the Committee in order to ensure they are relevant to participants and take account of the most up-to-date business plan and strategy.</p> <p>A significant majority (at least 50%) of the bonus opportunity will normally be determined by reference to performance against Group KPIs such as:</p> <ul style="list-style-type: none"> <li>• Underlying Profit Before Tax; and</li> <li>• Cash conversion.</li> </ul> <p>Any remaining part of an Executive Director's bonus will normally be based on the achievement of personal objectives which relate to delivery of the business strategy. See page 110 for examples.</p> <p>A payment scale for different levels of achievement against each performance target is specified by the Committee at the outset of each year – this ranges from zero for below-threshold performance up to 100% for full satisfaction of the relevant target.</p> <p>Bonus payments will also be subject to the Committee considering whether the proposed awards, calculated by reference to performance against the targets, appropriately reflect the Company's overall performance and shareholders' experience. If the Committee does not believe this to be the case, it retains the discretion to adjust the bonus outturn accordingly.</p>

THE STRUCTURE OF OUR DIRECTORS' REMUNERATION PACKAGE – THE POLICY TABLE (continued)

Pay element and link to strategy	Maximum	Operation	Framework for assessing performance
<p><b>Pay for performance: Long-term incentives</b></p> <p>Performance shares under the Long-Term Incentive Plan ('LTIP')</p> <p><i>To focus motivation on the long-term performance of the Group and reward shareholder value creation.</i></p> <p><i>To encourage share ownership and alignment with shareholders.</i></p>	<p>Maximum opportunity of 150% of base salary for the Chief Executive Officer, 130% for other Executive Directors.</p>	<p><b>LTIP – performance measured over a three-year period:</b></p> <p>Performance share awards under the LTIP are made on an annual basis to the Executive Directors and a small group of other senior managers.</p> <p>From time to time a number of employees below board level are granted non-performance based share awards to reflect exceptional performance.</p> <p><b>Holding Period</b></p> <p>Vesting of awards will generally take place on the third anniversary of grant or, if later, the date on which the performance conditions are assessed by the Committee.</p> <p>Executive Directors' awards that vest will normally be subject to a holding period in terms of which the relevant shares will only be released after a further period of at least two years has expired from the vesting date.</p> <p><b>Dividends and equivalents</b></p> <p>Dividends and dividend equivalents for each performance / holding period may also be paid in respect of shares under award to the extent that shares have vested in the relevant participants.</p> <p><b>Malus and clawback:</b> Long-term incentive awards may be subject to malus and/or clawback provisions if certain events occur after their grant but before the expiry of the period of two years from the end of the relevant performance period. These events include the Committee becoming aware of:</p> <ul style="list-style-type: none"> <li>• A material misstatement of the Company's financial results;</li> <li>• An error in the calculation of performance conditions; or</li> <li>• An act committed by the relevant participant that has (or could have) resulted in summary dismissal by reason of gross misconduct or which has caused significant reputational damage to the Group.</li> </ul> <p>The mechanism through which malus and clawback can be implemented enables the Committee to take various actions including:</p> <ul style="list-style-type: none"> <li>• Reducing outstanding incentive awards; and</li> <li>• Requiring a cash payment to be made by participants.</li> </ul>	<p>The vesting of long-term incentive awards is subject to both continued employment and the extent to which performance conditions measured over a specified three-year period are met.</p> <p>The measures and targets applicable to the long-term incentive awards will consist of challenging shareholder return, financial and strategic measures.</p> <p>The particular measures and targets to apply (and the different weightings ascribed to them) will be set annually by the Committee in order to ensure they are relevant to participants, challenging to achieve and take account of the most up-to-date business plan and strategy.</p> <p>The initial weightings between the two long-term incentive measures that we intend to use for the initial awards after the 2020 AGM are 67% EPS performance and 33% TSR performance; however our policy is simply for financial and shareholder return targets to make up at least 50% of awards.</p> <p>25% of each element of an award will vest for achieving the threshold performance target with 100% of the awards being earned for maximum performance (with straight-line vesting between these points).</p> <p>Further details of the performance conditions applicable to awards to be made in FY 2020/21 are set out on page 118.</p> <p>Formulaic outcome of all LTIP performance measures will also be subject to the Committee considering whether the proposed vesting levels, calculated by reference to performance against the targets, appropriately reflect the Company's overall performance and shareholders' experience. If the Committee does not believe this to be the case, it retains the discretion to adjust the LTIP outturn accordingly.</p>
<p><b>Chair and other Non-Executive Directors</b></p> <p><i>Helps recruit and retain high-quality experienced individuals.</i></p> <p><i>Reflects time commitment and role.</i></p>	<p>Company's Articles of Association place a limit on the aggregate annual level of Non-Executive Directors' and Chair's fees (currently £500,000).</p>	<p>The fees for Non-Executive Directors are set in line with prevailing market conditions and at a level that will attract individuals with the necessary experience and ability to make a significant contribution to the Group's affairs.</p> <p>Non-Executive Directors receive an annual basic fee plus an additional fee for acting as the Chair of the Audit or Remuneration Committee or the Senior Independent Director. An additional fee may be paid for membership of the Technical Exploitation Board ('TEB'). No Non-Executive Director is currently a member of the TEB. The Chair of the Board receives an annual fee payable monthly with no additional fees for chairing Board committees. They also receive reimbursement for travel and incidental costs (including any associated personal tax charges) incurred in furtherance of Company business.</p>	<p>None</p>

### Notes to the 2020 Policy table:

1. Where maximum amounts for elements of remuneration have been set within the 2020 Policy, these will operate simply as caps and are not indicative of any aspiration.
2. A description of how the Company intends to implement the 2020 Policy set out in the tables on pages 121 to 123 during the financial year to 30 June 2021 is provided on pages 117 and 118.
3. A general overview of how each remuneration element applies to other employees of the Group is included under the relevant section of the policy table.
4. The 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 2020 Policy (as set out on pages 121 to 123) where the terms of the payment were agreed:
  - a. before 29 October 2014 (the date the Company's first shareholder-approved Directors' Remuneration Policy came into effect);
  - b. before the 2020 Policy came into effect, provided that the terms of the payment were consistent with the shareholder-approved Directors' Remuneration Policy in force at the time they were agreed; or
  - c. at a time when the relevant individual was not a Director of the Company and, in the opinion of the Committee, the payment was not in consideration for the individual becoming a Director of the Company.For these purposes payments include the 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.
5. The 'framework for assessing performance' column of the tables on pages 121 to 123 provide information on choosing the particular performance measures and target setting in relation to them.
6. Ricardo's variable pay may have any performance conditions applicable to the relevant element amended or substituted by the Committee if an event occurs which causes the Committee to determine that an amended or substituted performance condition would be more appropriate and not materially less difficult to satisfy. The Committee may make adjustments, where these are fair and reasonable, to measures or targets to take account of, for example, the implications of acquisitions and disposals.
7. Long-term incentive awards can be granted in a variety of forms such as performance shares, nil-cost options or forfeitable shares and the Committee reserves the right to grant long-term incentive awards with the same economic effect but in any of these different contractual forms (including in cash). Long-term incentive awards can also be adjusted in the event of any variation of the Company's share capital or any demerger, delisting, special dividend or other event that may affect the Company's share price.
8. Under the terms of long-term incentive award performance conditions, where any company becomes unsuitable as a member of the comparator group as a result of, for example, a change of control or delisting, the Committee has the discretion to treat that company in such manner as it deems appropriate (including replacing it with another organisation).
9. In the event of a change of control, long-term incentive awards will normally vest at that time, taking into account, amongst other things, the extent to which any performance criteria have been met (over the shortened performance periods) and the time elapsed since grant.

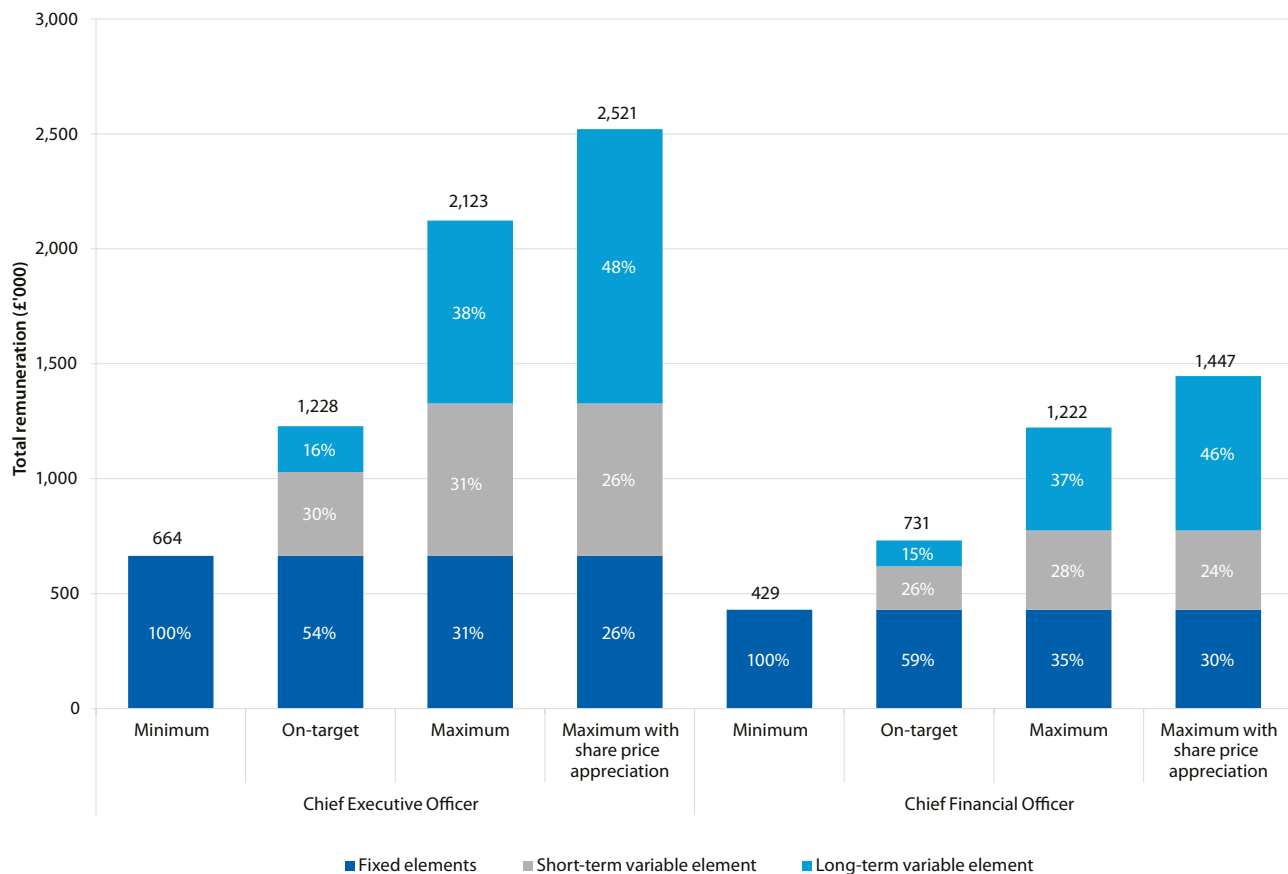
### All-employee share plans

For its UK employees the Company operates from time to time tax-advantaged share plans. These are a Share Incentive Plan ('SIP') and a Save As You Earn share option plan and they are intended to encourage share ownership and wider interest in the performance of the Company's shares. Executive Directors are eligible to participate in these arrangements up to the applicable statutory limits. The SIP provides for partnership, matching, free and dividend shares. Equivalent arrangements operate from time to time for non-UK employees.



### Illustrative remuneration outcomes at different performance levels

Ricardo's pay policy seeks to ensure the long-term interests of Executive Directors are aligned with those of shareholders. The remuneration packages for each Executive Director and their fixed and variable elements are reviewed annually. The scenario chart below presents remuneration outcomes for the 2020 Policy under minimum, on-target, maximum and maximum with share price appreciation scenarios.



The target scenario broadly illustrates the remuneration level when budgeted performance is achieved. A further column has also been included which illustrates the impact on the figures contained in the maximum scenario of an assumed share price appreciation for the LTIP award of 50% over the relevant performance period. The disclosures in the chart above reflect FY 2020/21 data on the basis of the assumptions set out below.

- Fixed elements comprise current base salary, pension and other benefits. For example, for the Chief Executive Officer, fixed elements comprise base salary of £530,484, pension (pension contribution and cash in lieu) of 21.2% of base salary above the Lower Earnings Limit and benefits equal to those received in the 2019/20 financial year;
- For minimum performance, Executive Directors receive only the fixed elements of pay;
- For target performance, an assumption of 55% of bonus pay-out and threshold vesting (25%) in respect of long-term incentives has been applied;
- For maximum performance, an assumption of maximum bonus pay-out and maximum vesting in respect of long-term incentives has been applied;
- Save for the "maximum with share price appreciation column", no share price increase has been assumed for the above and this means that the single total figure in any year may be higher than the maximum shown above; and
- For maximum with share price growth performance, share price appreciation of 50% over the relevant performance period has been assumed for the LTIP awards.

### Recruitment remuneration policy

New Executive Directors will be appointed on remuneration packages with the same structure and elements as described in the policy table starting on page 121. Annual bonus and long-term incentive awards will be within the limits described in the policy table for the particular role. The limits for any new Executive Director roles will be set by the Committee taking into account the particular responsibilities of the role, but will not exceed those that apply to the current Chief Executive Officer. Pension contribution levels will be aligned to those applicable to the wider workforce.

For external appointments, although we have no plans to offer additional benefits on recruitment (and indeed did not do so for our last Executive Director appointment), the Committee reserves the right to offer such benefits when it considers this to be in the best interests of the Company and shareholders and in order to protect a new Director against additional costs. The Committee may agree that the Company will meet certain relocation expenses as appropriate.

The Company may make an award to compensate a new recruit for the value of any remuneration relinquished when leaving a former employer. Any such award would reflect the nature, timescales and performance requirements attaching to that relinquished remuneration. The Listing Rules exemption 9.4.2 may be used for the purpose of such an award. Shareholders will be informed of any such payments as soon as practicable following the appointment.

For an internal appointment, any variable pay element awarded in respect of the prior role may be allowed to pay out according to its terms, adjusted as relevant to take into account the appointment. In addition, any other ongoing remuneration obligations existing prior to appointment may continue, and will be disclosed to shareholders at the earliest opportunity.

On the appointment of a new Chair or Non-Executive Director, fees will be set taking into account the experience and calibre of the individual. Where specific cash or share arrangements are delivered to Non-Executive Directors, these will not include share options or other performance-related elements.

The Board's policy on setting notice periods for Directors is that these should not exceed one year. It recognises, however, that it may be necessary in the case of new executive appointments to offer an initial longer notice period, which would subsequently reduce to one year after the expiry of that period. All future appointments to the Board will comply with this requirement.

### Termination remuneration policy

The contractual termination provision is payment in lieu of notice equal to one year's base salary or, if termination is part way through the notice period, the amount of base salary relating to any unexpired notice to the date of termination.<sup>(1)</sup> There is an obligation on Directors to mitigate any loss which they may suffer if the Company terminates their service contract. The Committee will take such mitigation obligation into account when determining the amount and timing of any compensation payable to any departing Director. No compensation is paid for summary dismissal, save for any statutory entitlements.

The cash element of the bonus is not payable unless the individual remains in employment at the payment date.

Unvested share-based awards will lapse unless the individual concerned leaves for one of a number of specified 'good leaver' reasons which are: death; injury, illness or disability; redundancy; or retirement. The Committee retains the discretion to prevent such awards from lapsing depending on the circumstances of the departure and the best interests of the Company.

Awards which do not lapse on cessation of employment will vest on their originally anticipated vesting date with the new holding period also continuing to apply (although the Committee retains the discretion to allow vesting and/or release from the holding period at cessation, depending on the circumstances under the applicable rules). These awards will also usually be subject to a time pro-rating reduction to reflect the unexpired portion of the performance or deferral period concerned, although the Committee will retain the discretion to disapply this pro-rating. Awards that are subject to performance conditions will usually only vest to the extent that these conditions are satisfied.

Executive Directors will also be entitled to a payment in respect of any accrued but untaken holiday and statutory entitlements on termination.

In the event that any payment is made in relation to termination for an Executive Director, this will be fully disclosed.

(1) For Ian Gibson the contractual termination provision is payment in lieu of notice equal to one year's base salary, car allowance and pension allowance, to the extent that these benefits are paid in cash.

## Executive Directors' service contracts

The current Executive Directors' service contracts contain the key terms shown in the table below:

Provision	Detailed terms
<b>Remuneration</b>	<ul style="list-style-type: none"> <li>• Salary, pension and benefits;</li> <li>• Company car or cash allowance;</li> <li>• Private health insurance for Director and dependants;</li> <li>• Life assurance and death in-service benefits;</li> <li>• Permanent health and disability insurance;</li> <li>• Director's liability insurance;</li> <li>• 30 days' paid annual leave;</li> <li>• Participation in annual bonus plan, subject to plan rules and at the discretion of the Committee; and</li> <li>• Eligible to participate in share plans, subject to plan rules and at the discretion of the Committee.</li> </ul>
<b>Duration</b>	• Indefinite subject to termination by either party in certain circumstances including serving notice as set out below.
<b>Notice period</b>	• 6 months' notice by the Director and 12 months' notice by the Company.
<b>Termination payment</b>	• See separate disclosure on page 126.
<b>Restrictive covenants</b>	• During employment and for 6 months after leaving. <sup>(1)</sup>

(1) Except for Ian Gibson who is restricted for 12 months after leaving

The Executive Directors' service contracts are available for inspection, on request, at the Company's registered office.

## Non-Executive Directors – fees and letters of appointment

The Committee determines the Chair's fees. The Chair and the Executive Directors determine the fees to other Non-Executive Directors. No Director is present for any discussion or decision about his or her own remuneration. The fees are reviewed each January.

The Non-Executive Directors do not participate in any of the Company's employee share plans, pension schemes or bonus arrangements, nor do they have service agreements. They are appointed for a period of three years by letter of appointment and are entitled to one month's notice of early termination for which no compensation is payable. The unexpired terms of the Non-Executive Directors' appointments, as at 30 June 2020, are:

Non-Executive Director	Unexpired terms of appointment (months)
Sir Terry Morgan CBE	30
Russell King	26
Laurie Bowen	12
Malin Persson	18
Bill Spencer	34
Jack Boyer	26

The Directors' Remuneration Report, comprising the Chair's Overview and Annual Statement in Part 1, the Annual Report on Remuneration in Part 2 and the Directors' Remuneration Policy in Part 3 was approved by the Board on 9 September 2020 and signed on its behalf by:

**Russell King**

Chair of the Remuneration Committee



# Directors' report



**Patricia Ryan**  
Group General Counsel and  
Company Secretary

The Directors present their report and the audited consolidated financial statements of Ricardo plc for the year ended 30 June 2020.

## Dividends

On 6 April 2020 an interim dividend of 6.24p (HY 2018/19: 6.00p) was paid to shareholders. Due to the reduced performance experienced by the Group in the second half of the year and, after careful consideration, the Board have decided not to recommend a final dividend for the year. This difficult decision has been taken to protect the Group's financial position. The board recognises the importance of dividends to shareholders and intends to resume dividend payments as soon as it is appropriate to do so.

## Acquisitions and disposals

The acquisition of PLC Consulting Pty Ltd was completed on 31 July 2019 and the entity was subsequently renamed Ricardo Energy, Environment and Planning Pty Ltd, a wholly-owned subsidiary of Ricardo Australia Pty Ltd.

Ricardo Real Estate LLC purchased the freehold title to the campus occupied by its fellow subsidiary, Ricardo, Inc. in Detroit, Michigan on 21 August 2019, on which Ricardo, Inc. was previously committed as a leasehold tenant until October 2037.

Ricardo Real Estate LLC and Ricardo Inc sold the business, assets and freehold title to the real estate of the testing business conducted at its campus in Detroit, Michigan on 3 June 2020.

Ricardo sold the business and intellectual property right in Dolphin N2 Limited to FPT Industrial S.p.A. on 19 December 2019.

## Events after the reporting date

On 9 September 2020, the definition of the Adjusted Leverage covenant for the December 2020 covenant test date was amended to be based on two times the six months' EBITDA to December 2020. In addition, the June 2021 covenant was increased to 3.75. The Interest Cover covenant remains at 4.0x, with the December 2020 test based on two times the six months' EBITDA to December 2020.

## Research and Development

The Group continues to devote effort and resources to the research and development of new technologies. Costs of £12.5m have been incurred, of which £8.0m has been capitalised and £4.5m has been charged to the income statement during the year.

## Board of Directors

The current Directors of the Company at the date of this report appear on pages 88 and 89. Russell King and Jack Boyer OBE were appointed to the Board on 5 September 2019. Peter Gilchrist CB retired from the Board on 14 November 2019 and on 12 May 2020, Mark Garrett announced his intention to resign from the Board with effect from 31 July 2020.

## Directors' interests in shares

Directors' interests in shares and share options are detailed on pages 114 to 116 of the Directors' Remuneration Report.

## Directors' indemnities

The Company has entered into deeds of indemnity in favour of each of its Directors, under which the Company agrees to indemnify each Director against liabilities incurred by that Director in respect of acts or omissions arising in the course of their office or otherwise by virtue of their office.

Where such deeds are for the benefit of Directors, they are qualifying third-party indemnity provisions as defined by section 309B of the Companies Act 1985 or section 234 of the Companies Act 2006, as applicable. At the date of this report, these indemnities are therefore in force for the benefit of all the current Directors of the Company.

On 30 June 2014, Ricardo UK Limited and Ricardo-AEA Limited, subsidiaries of the Group, entered into qualifying third-party indemnity provisions as defined by section 234 of the Companies Act 2006 in favour of their Directors, under which each Director is indemnified against liabilities incurred by that Director in respect of acts or omissions arising in the course of their office or otherwise by virtue of their office and such provisions remain in force as at the date of this report.

## Employee information

The Company provides employees with various opportunities to obtain information on matters of concern to them and to improve awareness of the financial and economic factors that affect the performance of the Company. These include bi-annual presentations to all members of staff, department and team briefings and meetings with employee representatives that take place throughout the year.

All companies within the Group strive to operate fairly at all times and this includes not permitting discrimination against any employee or applicant for employment on the basis of race, religion or belief, colour, gender, disability, national origin, age, military service, veteran status, sexual orientation or marital status. This includes giving full and fair consideration to suitable applications for employment from disabled persons and making appropriate accommodations so that if existing employees become disabled they can continue to be employed, wherever practicable, in the same job or, if this is not practicable, making every effort to find suitable alternative employment and to provide relevant training.

## Change of control provisions

There are a number of agreements that take effect, alter or terminate upon a change of control of the Company following a takeover bid, such as commercial contracts, bank facility agreements, property lease arrangements and employees' share plans. None of these are considered to be significant in terms of their likely impact on the business of the Group as a whole.

## Management report

The management report required by the provisions of the Disclosure and Transparency Rules is included within the Strategic Report and has been prepared in consultation with management.

## Share capital

As at 19 August 2020, the Company's share capital is divided solely into 53,406,250 ordinary shares of 25 pence each, all of which are fully paid. The ordinary shares are listed on the London Stock Exchange.

All ordinary shares rank equally for all dividends and distributions that may be declared on such shares. At general meetings of the Company, each member who is present (in person, by proxy or by representative) is entitled to one vote on a show of hands and, on a poll, to one vote per share.

With respect to shares held on behalf of participants in the all-employee Share Incentive Plan, the trustees are required to vote as the participants direct them to do so in respect of their plan shares. There are no restrictions on voting rights and no securities carry special voting rights with regard to the control of the Company.

Awards granted under the Company's share plans are satisfied either by shares held in the employee benefit trust or by the issue of new shares when awards vest. The Remuneration Committee monitors the number of awards made under the various share plans and their potential impact on the relevant

dilution limits recommended by the Investment Association.

Based on the Company's issued share capital as at 30 June 2020, the overall dilution was 4.56% (i.e. below the 10% limit for all plans in any rolling 10-year period) and 4.12% for discretionary employee share plans (i.e. below the 5% limit for discretionary employee share plans in any rolling 10-year period).

The Company was given authority to purchase up to 15% of its existing ordinary share capital at the 2019 AGM. That authority will expire at the conclusion of the 2020 AGM unless renewed. Accordingly, a special resolution to renew the authority will be proposed at the forthcoming AGM.

The existing authority for Directors to allot ordinary shares will expire at the conclusion of the 2020 AGM unless renewed. Accordingly, an ordinary resolution to renew this authority will be proposed at the forthcoming AGM. In addition, it will be proposed to give the Directors further authority for a period of one year to allot ordinary shares in connection with a rights issue in favour of ordinary shareholders. This is in accordance with guidance issued by the Association of British Insurers. If the Directors were to use further authority in the year following the 2020 AGM, all Directors wishing to remain in office would stand for re-election at the 2021 AGM.

Details of these resolutions are included with the Notice of AGM.

## Resolutions at the Annual General Meeting

The Company's AGM will be held on 12 November 2020. The Notice of AGM sets out the resolutions to be considered and approved at the meeting, together with some explanatory notes. The resolutions cover such routine matters as the renewal of authority to allot shares, to disapply pre-emption rights and to purchase own shares.

## Substantial shareholdings

As at 19 August 2020, the Company has been notified of the following material interests in the voting rights of the Company under the provisions of the Disclosure and Transparency Rules.

Shareholders	Number of shares	% of issued share capital
Aberdeen Standard Investments (Standard Life)	3,845,543	7.20
Aviva Investors	3,557,855	6.66
Invesco Asset Management	2,931,849	5.49
Impax Asset Management	2,792,457	5.23
Royal London Asset Management	2,723,324	5.10
Canaccord Genuity Wealth Mgt	2,700,000	5.06
JO Hambro Capital Mgt	2,283,836	4.28

## Donations

During the year the Group made various charitable donations, which are summarised in the Environmental, Social and Governance Report on page 33. The Group made no political donations during the year to 30 June 2020.

### Independent auditors

Following shareholder approval at the 2019 AGM, KPMG LLP were appointed as independent auditors of the Group and Company for the year ended 30 June 2020.

A resolution to re-appoint KPMG LLP as independent auditors of the Group and Company will be proposed at the 2020 AGM.

### Going concern

Having assessed the principal risks and the other matters discussed in connection with the Viability Statement on pages 40 and 41, the Directors considered it appropriate to adopt the going concern basis of accounting in preparing the financial statements.

### Branches outside the UK

The Company has no overseas branches outside the UK. A number of the Group's subsidiaries have overseas branches outside the UK, which are disclosed in their local statutory financial statements, where required.

### Additional information

Certain information that is required to be included in the Directors' Report can be found elsewhere in this document as referred to below, each of which is incorporated into the Directors' Report by cross-reference:

- An indication of the likely future developments in the Group's business can be found in the Strategic Report, on pages 9, 13, 49, 51, 53, 55, 57 and 59;

- Information on greenhouse gas emissions can be found on page 31;
- The Group's statement on corporate governance can be found in the Corporate Governance Statement on pages 90 to 96; and
- The Group's financial risk management objectives and policies in relation to its use of financial instruments and its exposure to capital, liquidity, credit and market risk, to the extent they are material, are set out in Note 27 to the Group financial statements.

The Directors' Report was approved by order of the Board on 9 September 2020 and signed on its behalf by:



**Patricia Ryan**  
Group General Counsel and Company Secretary



# Statement of Directors' responsibilities

in respect of the Annual Report and the financial statements

The directors are responsible for preparing the Annual Report and the Group and parent Company financial statements in accordance with applicable law and regulations.

Company law requires the directors to prepare Group and parent Company financial statements for each financial year. Under that law they are required to prepare the Group financial statements in accordance with International Financial Reporting Standards as adopted by the European Union (IFRSs as adopted by the EU) and applicable law and have elected to prepare the parent Company financial statements in accordance with UK accounting standards, including FRS 101 Reduced Disclosure Framework.

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

- Select suitable accounting policies and then apply them consistently;
- Make judgements and estimates that are reasonable, relevant, reliable and prudent;
- For the Group financial statements, state whether they have been prepared in accordance with IFRSs as adopted by the EU;
- For the parent Company financial statements, state whether applicable UK accounting standards have been followed, subject to any material departures disclosed and explained in the parent company financial statements;
- Assess the Group and parent Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern; and
- Use the going concern basis of accounting unless they either intend to liquidate the Group or the parent Company or to cease operations, or have no realistic alternative but to do so.

The directors are responsible for keeping adequate accounting records that are sufficient to show and explain the parent Company's transactions and disclose with reasonable accuracy at any time the financial position of the parent Company and enable them to ensure that its financial statements comply with the Companies Act 2006. They are responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error, and have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities.

Under applicable law and regulations, the directors are also responsible for preparing a Strategic Report, Directors' Report, Directors' Remuneration Report and Corporate Governance Statement that complies 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

We confirm that to the best of our 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; and
- The strategic report includes a fair review of the development and performance of the business and the position of the issuer and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face.

We consider the annual report and accounts, taken as a whole, is fair, balanced and understandable and provides the information necessary for shareholders to assess the group's position and performance, business model and strategy.



**Dave Shemmans**  
Chief Executive Officer



**Ian Gibson**  
Chief Financial Officer

9 September 2020



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# Independent auditor's report

to the members of Ricardo plc

## 1. Our opinion is unmodified

We have audited the financial statements of Ricardo Plc ("the Company") for the year ended 30 June 2020 which comprise the Consolidated income statement, Consolidated statement of comprehensive income, Consolidated statement of financial position, Consolidated statement of changes in equity, Consolidated cash flow statement, Company statement of financial position, Company statement of changes in equity, and the related notes, including the accounting policies in Note 1.

### In our opinion:

- the financial statements give a true and fair view of the state of the Group's and of the parent Company's affairs as at 30 June 2020 and of the Group's loss 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 (IFRSs as adopted by the EU);
- the parent Company financial statements have been properly prepared in accordance with IFRSs as adopted by the EU and as applied in accordance with the provisions of the Companies Act 2006; and the financial statements have been prepared in accordance with the requirements of the Companies Act 2006 and, as regards the Group financial statements, Article 4 of the IAS Regulation.

## Basis for opinion

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

We were first appointed as auditor by the shareholders on 15 November 2018. The period of total uninterrupted engagement is for the two financial years ended 30 June 2020. We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities. No non-audit services prohibited by that standard were provided.

## Overview

<b>Materiality:</b>	£1.3m (2019:£1.6m)
group financial statements as a whole	5.0% (2019: 4.8%) of normalised profits and losses that make up Group profit before tax
<b>Coverage</b>	82% (2019:67%) of normalised profits and losses that make up Group profit before tax

### Key audit matters vs 2019

<b>Emergence of COVID-19</b>	<b>New:</b> Going Concern	▲
<b>Recurring risks</b>	Revenue recognition of fixed priced contracts	◀▶
	Valuation of defined benefit pension obligation	◀▶

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

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

	The risk	Our response
<p><b>Going Concern</b></p>	<p><b>Disclosure quality:</b></p> <p>The financial statements explain how the Board has formed a judgement that it is appropriate to adopt the going concern basis of preparation for the Group and parent Company.</p> <p>That judgement is based on an evaluation of the inherent risks to the Group's and parent Company's business model and how those risks might affect the Group's and parent Company's financial resources or ability to continue operations over a period of at least a year from the date of approval of the financial statements.</p> <p>The risks most likely to adversely affect the Group's and parent Company's available financial resources over this period is the impact of the global pandemic caused by the emergence of a novel coronavirus, COVID-19.</p> <p>The risk for our audit was whether or not those risks were such that they amounted to a material uncertainty that may have cast significant doubt about the ability to continue as a going concern. Had they been such, then that fact would have been required to have been disclosed.</p>	<p>Our procedures included:</p> <ul style="list-style-type: none"> <li>• <b>Funding assessment:</b> Obtained direct confirmation from the lender of the committed facilities available to the Group and any related covenants;</li> <li>• <b>Historical comparisons:</b> Assessed the directors' historical forecasting accuracy by comparing previous forecasts with the actual cashflows achieved in the respective periods;</li> <li>• <b>Key dependency assessment:</b> Identified the critical factors in determining whether there is a risk of failure by identifying the key drivers behind the cashflows, being the timing of delivering on contracts, that are most exposed to the economic uncertainty that COVID-19 presents;</li> <li>• <b>Sensitivity analysis:</b> Considered sensitivities over the level of available financial resources indicated by the Group's financial forecasts taking account of reasonably possible (but not unrealistic) adverse effects that could arise from these risks individually and collectively;</li> <li>• Challenged the directors' assessment of forecasts with, particular focus on revenue as this is considered to be the key driver in the forecasts;</li> <li>• <b>Evaluating directors' intent:</b> Evaluated the achievability of the actions the Directors consider they would take to improve the position should the risks materialise;</li> <li>• We critically assessed the mitigating actions identified, for example the reduction of discretionary spend and obtained an understanding of their potential impact on the Group should they need to be implemented.</li> <li>• <b>Assessing transparency:</b> Assessed the completeness and accuracy of the matters covered in the going concern disclosure by comparing it to our knowledge obtained during the course of our audit.</li> </ul> <p><b>Our results</b></p> <ul style="list-style-type: none"> <li>• We found the going concern disclosure without any material uncertainty to be acceptable.</li> </ul>

## 2. Key audit matters: our assessment of risks of material misstatement (continued)

	The risk	Our response
<p><b>Revenue recognition on fixed price contracts</b> (£189.5 million; 2019: £210.7m)</p> <p><i>Refer to page 100 (Audit Committee Report), page 148 (accounting policy) and page 157 (financial disclosures).</i></p>	<p><b>Subjective estimate:</b></p> <p>For fixed price contracts the Group recognises the majority of revenue and profit on the stage of completion based on the proportion of contract costs incurred for the work performed to the balance sheet date, relative to the estimated total forecast costs of the contract at completion.</p> <p>The highest value, highest risk, most technically complex and financially challenging contracts to deliver are categorised as 'Red CAT 4' contracts, which are subject to more frequent and senior levels of management review.</p> <p>The key judgments impacting the recognition of revenue include:</p> <ul style="list-style-type: none"> <li>• The identification of distinct performance obligations.</li> <li>• Assessment of stage of completion and costs to complete</li> <li>• The recognition of variations.</li> </ul> <p>The most significant estimate impacting the recognition of revenue is costs to complete.</p> <p>The effect of these matters is that, as part of our risk assessment, we determined that amount of revenue recognised on fixed price contracts has a high degree of estimation uncertainty, with a potential range of reasonable outcomes greater than our materiality for the financial statements as a whole, and possibly many times that amount. The financial statements (note 1c) disclose the range estimated by the Group.</p>	<p>Our procedures included:</p> <ul style="list-style-type: none"> <li>• <b>Control reperformance:</b> Our planned procedures initially included testing key controls over recording work done through timesheet approvals and invoicing through invoice approval. Our testing over the IT control environment identified weaknesses and as a result we expanded the extent of our detailed procedures over and above that originally planned.</li> </ul> <p>The following procedures reflect our expanded testing:</p> <ul style="list-style-type: none"> <li>• <b>Control observation:</b> We attended the 'Red CAT 4' review meetings in January and July 2020 at which performance of these contracts was discussed with the Chief Financial Officer and divisional Managing and Finance Directors;</li> <li>• <b>Test of detail:</b> We selected a sample of costs incurred in the year and agreed to supporting documentation which included, for example; invoices and timesheets;</li> <li>• We inspected a sample of correspondence with customers and instances where contractual variations had arisen to inform our assessment of the revenue and costs recorded up to the balance sheet date. We also agreed the variations to relevant invoicing schedules and payment plans and the subsequent cash receipts, where possible.</li> <li>• <b>Historical comparisons:</b> We assessed the reasonableness of the Group's forecasts by comparing with the comparative year forecasts and the financial performance.</li> <li>• <b>Independent performance:</b> We recalculated the stage of completion on the basis of actual costs and the Group's latest forecast to inform our assessment of the appropriate amount of revenue and profit to recognise and compared this to the amounts recorded by the Group.</li> <li>• <b>Assessing transparency:</b> We considered the adequacy of the Group's disclosures about the degree of estimates involved in estimating the stage of completion for determining the revenue amounts for fixed price contracts.</li> </ul> <p><b>Our results</b></p> <p>We found revenue recognition on fixed price contracts to be acceptable. (2019: acceptable)</p>



## 2. Key audit matters: our assessment of risks of material misstatement (continued)

	The risk	Our response
<p><b>Group and parent Company: Valuation of defined benefit pension obligation</b> (£157.1m; 2019: £146.0m)</p> <p><i>Refer to page 100 (Audit Committee Report), page 153 (accounting policy) and page 183 (financial disclosures).</i></p>	<p><b>Subjective estimate:</b></p> <p>Significant estimates, including the discount rate, inflation rate and mortality rate, are made in valuing the Group's and parent Company's defined benefit obligation (before deducting the schemes' assets). Small changes in the assumptions and estimates would have a significant effect on the Group's and parent Company's net deficit.</p> <p>The effect of these matters is that, as part of our risk assessment, we determined that the valuation of the defined benefit obligation has a high degree of estimation uncertainty, with a potential range of reasonable outcomes greater than our materiality for the financial statements as a whole, and possibly many times that amount. The financial statements (Note 33) disclose the sensitivity estimated by the Group and Parent Company.</p>	<p>Our procedures included:</p> <ul style="list-style-type: none"> <li>• <b>Benchmarking assumptions:</b> We challenged key assumptions applied (discount rate, inflation rate, and mortality rate) with the support of our own actuarial specialists, including a comparison of key assumptions against external market data;</li> <li>• <b>Assessing transparency:</b> We considered the adequacy of the Group and Company's disclosures in respect of the sensitivity of the deficit to changes in key assumptions.</li> </ul> <p><b>Our results</b></p> <p>We found the valuation of the defined benefit pension obligation to be acceptable. (2019: acceptable)</p>

We continue to perform procedures over the impact of uncertainties due to the UK exiting the European Union on our audit. However, following the business having established a clearer understanding of the risks posed and also the emergence of more severe risks such as the COVID-19 pandemic, we have not assessed this as one of the most significant risks in our current year audit and, therefore, it is not separately identified in our report this year.

### 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 £1.3m (2019: £1.6m), determined with reference to a benchmark of Group profit before tax, normalised to exclude exceptional acquisition related expenditure, asset purchases and disposals and other reorganisation costs as disclosed in note 6 and by averaging over the last three years due to the impact of the COVID-19 pandemic on the results of the Group, of which it represents 5.0% (2019: 4.8%).

Materiality for the parent company financial statements as a whole was set at £0.5m (2019:£1.5m), determined with reference to a benchmark of company total assets, of which it represents 0.2% (2019: 1.5%). We agreed to report to the Audit Committee any corrected or uncorrected identified misstatements exceeding £0.07m (2019: £0.08m), in addition to other identified misstatements that warranted reporting on qualitative grounds.

Of the group's 60 (2019: 63) reporting components, we subjected 10 (2019: 12) to full scope audits for group purposes and 9 (2019: 4) to specified risk- focused audit procedures. The latter were not individually financially significant enough to require a full scope audit for group purposes, but did present specific individual risks that needed to be addressed. We have changed the way that we have assessed the number of components in the current year and have restated the prior year comparative to be aligned. We subjected 9 (2019: 4) components to specified risk-focused audit procedures over revenue and journal entries.

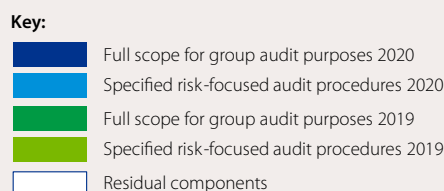
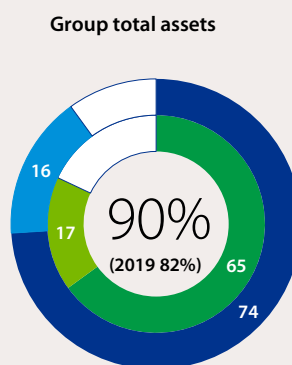
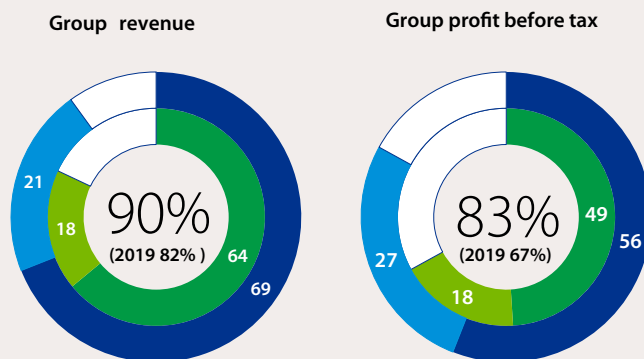
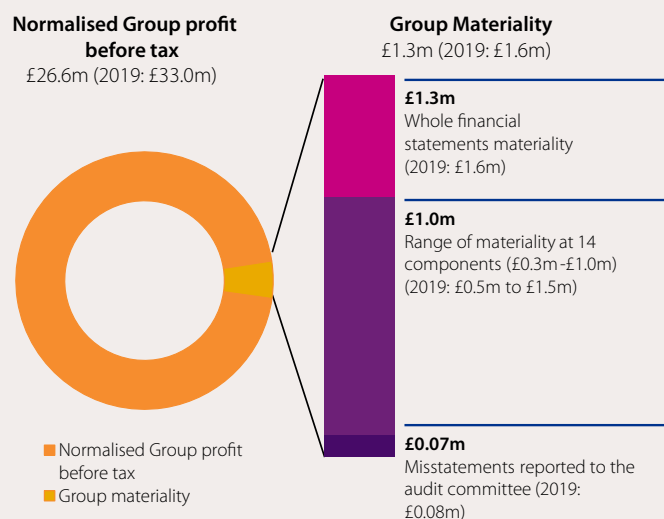
The group team performed procedures on the items excluded from normalised group profit before tax.

The components within the scope of our work accounted for the percentages illustrated opposite. The remaining 10% (2019: 18%) of total group revenue, 17% (2019: 33%) of group profit before tax and 10% (2019: 18%) of total group assets is represented by 41 (2019: 47) reporting components, none of which individually represented more than 6.5% (2019: 5.5%) of any of total group revenue, group profit before tax or total group assets. For these residual 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 team instructed component auditors as to the significant areas to be covered, including the relevant risks detailed above and the information to be reported back.

The Group team approved the component materialities, which ranged from £0.3m to £1.0m (2019: £0.5m to £1.5m) , having regard to the mix of size and risk profile of the Group across the components. The work on 7 of the 19 components (2019: 3 of the 16 components) was performed by component auditors and the rest, including the audit of the parent company, was performed by the Group team.

The Group visited 0 (2019:3) component auditors in 3 (2019: 2) locations to assess the audit risk and strategy. No sites were visited by the Group team in the current year due to travel restrictions caused by the COVID-19 pandemic and instead video and telephone conference calls were held with all component auditors. At these meetings, the findings reported to the Group team were discussed in more detail, and any further work required by the Group team was then performed by the component auditor



#### 4. We have nothing to report on going concern

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

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

We identified going concern as a key audit matter (see section 2 of this report). Based on the work described in our response to that key audit matter, we are required to report to you if:

- we have anything material to add or draw attention to in relation to the directors' statement in Note 1 to the financial statements on the use of the going concern basis of accounting with no material uncertainties that may cast significant doubt over the Group and Company's use of that basis for a period of at least twelve months from the date of approval of the financial statements; or
- the related statement under the Listing Rules set out on page 131 is materially inconsistent with our audit knowledge.

We have nothing to report in these respects.

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

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

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

##### Strategic report and directors' report

Based solely on our work on the other information:

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

##### Directors' remuneration report

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

##### Disclosures of emerging and principal risks and longer-term viability

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

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



## 5. We have nothing to report on the other information in the Annual Report (continued)

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

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

### Corporate governance disclosures

We are required to report to you if:

- we have identified material inconsistencies between the knowledge we acquired during our financial statements audit and the directors' statement that they consider that the annual report and financial statements taken as a whole is fair, balanced and understandable and provides the information necessary for shareholders to assess the Group's position and performance, business model and strategy; or
- the section of the annual report describing the work of the Audit Committee does not appropriately address matters communicated by us to the Audit Committee.

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

We have nothing to report in these respects.

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

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

- adequate accounting records have not been kept by the parent Company, or returns adequate for our audit have not been received from branches not visited by us; or
- the parent Company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

We have nothing to report in these respects.

## 7. Respective responsibilities

### Directors' responsibilities

As explained more fully in their statement set out on page 131, the directors are responsible for: the preparation of the financial statements including being satisfied that they give a true and fair view; such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error; assessing the Group and parent Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern; and using the going concern basis of accounting unless they either intend to liquidate the Group or the parent Company or to cease operations, or have no realistic alternative but to do so.

### Auditor's responsibilities

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

A fuller description of our responsibilities is provided on the FRC's website at [www.frc.org.uk/auditorsresponsibilities](http://www.frc.org.uk/auditorsresponsibilities).

### Irregularities – ability to detect

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

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

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

## 7. Respective responsibilities (continued)

Secondly, the group is subject to many other laws and regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements, for instance through the imposition of fines or litigation. We identified the following areas as those most likely to have such an effect: health and safety, anti-bribery, employment law, pension regulations, regulatory capital and liquidity and certain aspects of company legislation recognising the nature of the group's activities. Auditing standards limit the required audit procedures to identify non-compliance with these laws and regulations to enquiry of the directors and other management and inspection of regulatory and legal correspondence, if any. These limited procedures did not identify actual or suspected non-compliance

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

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

This report is made solely to the Company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the Company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's members, as a body, for our audit work, for this report, or for the opinions we have formed.



**Michael Harper**  
**(Senior Statutory Auditor)**

for and on behalf of KPMG LLP, Statutory Auditor  
Chartered Accountants  
15 Canada Square London E14 5GL  
9 September 2020

# Group primary statements

## Consolidated income statement for the year ended 30 June

	Note	2020			2019		
		Underlying £m	Specific adjusting items <sup>(1)</sup> £m	Total £m	Underlying £m	Specific adjusting items <sup>(1)</sup> £m	Total £m
Revenue	5 & 6	352.0	-	352.0	384.4	-	384.4
Cost of sales		(236.9)	-	(236.9)	(249.5)	-	(249.5)
Gross profit		115.1	-	115.1	134.9	-	134.9
Administrative expenses		(96.4)	(20.9)	(117.3)	(96.3)	(10.5)	(106.8)
Other income		1.3	-	1.3	1.0	-	1.0
Operating profit/(loss)	4 & 5	20.0	(20.9)	(0.9)	39.6	(10.5)	29.1
Finance income	10	0.4	-	0.4	0.5	-	0.5
Finance costs	10	(4.8)	-	(4.8)	(3.1)	-	(3.1)
Net finance costs	10	(4.4)	-	(4.4)	(2.6)	-	(2.6)
<b>Profit/(loss) before taxation</b>		<b>15.6</b>	<b>(20.9)</b>	<b>(5.3)</b>	<b>37.0</b>	<b>(10.5)</b>	<b>26.5</b>
Tax expense	12	(4.1)	3.0	(1.1)	(8.2)	1.6	(6.6)
<b>Profit/(loss) for the year</b>		<b>11.5</b>	<b>(17.9)</b>	<b>(6.4)</b>	<b>28.8</b>	<b>(8.9)</b>	<b>19.9</b>
Profit/(loss) attributable to:							
- Owners of the parent		11.4	(17.9)	(6.5)	28.7	(8.9)	19.8
- Non-controlling interests	31	0.1	-	0.1	0.1	-	0.1
		11.5	(17.9)	(6.4)	28.8	(8.9)	19.9
<b>(Loss)/earnings per ordinary share attributable to owners of the parent during the year</b>							
Basic	8			(12.2)p			37.1p
Diluted	8			(12.2)p			36.9p

(1) Specific adjusting items are disclosed separately in the financial statements where it is necessary to do so to provide further understanding of the financial performance. Further details are given in Note 3 and Note 7.

## Consolidated statement of comprehensive income for the year ended 30 June

	Note	2020 £m	2019 £m
(Loss)/profit for the year		(6.4)	19.9
Other comprehensive (expense)/income			
Items that will not be reclassified to profit or loss:			
Remeasurements of the defined benefit pension scheme	33	(2.7)	(7.9)
Deferred tax on remeasurements of the defined benefit pension scheme	21	1.1	1.4
Total items that will not be reclassified to profit or loss		(1.6)	(6.5)
Items that may be subsequently reclassified to profit or loss:			
Currency translation on foreign currency net investments	29	0.5	1.2
Fair value gains on foreign currency cash flow hedges	26	(0.1)	0.1
Total items that may be subsequently reclassified to profit or loss		0.4	1.3
Total other comprehensive expense for the year (net of tax)		(1.2)	(5.2)
<b>Total comprehensive (expense)/income for the year</b>		<b>(7.6)</b>	<b>14.7</b>
(Expense)/income attributable to:			
- Owners of the parent		(7.7)	14.6
- Non-controlling interests	31	0.1	0.1
		(7.6)	14.7

The notes on pages 146 to 191 form an integral part of these Group financial statements.



## Consolidated statement of financial position as at 30 June

	Note	2020 £m	2019 £m
<b>Assets</b>			
<b>Non-current assets</b>			
Goodwill	15	87.8	84.2
Other intangible assets	16	39.9	41.0
Property, plant and equipment	17	45.4	44.6
Right-of-use assets	18	23.9	-
Other receivables	23	3.2	-
Deferred tax assets	21	9.4	6.7
		<b>209.6</b>	176.5
<b>Current assets</b>			
Inventories	22	20.1	14.5
Trade, contract and other receivables	23	115.6	141.4
Derivative financial assets	26	3.9	0.3
Current tax assets		5.7	-
Cash and cash equivalents	25	66.3	36.3
		<b>211.6</b>	192.5
Non-current assets held for sale	19	5.3	2.9
		<b>216.9</b>	195.4
<b>Total assets</b>		<b>426.5</b>	371.9
<b>Liabilities</b>			
<b>Current liabilities</b>			
Borrowings	25	(10.6)	(4.0)
Lease liabilities	18	(6.7)	-
Trade, contract and other payables	24	(72.0)	(84.8)
Current tax liabilities		(7.5)	(3.5)
Derivative financial liabilities	26	(6.5)	(1.2)
Provisions	20	(3.2)	(2.2)
		<b>(106.5)</b>	(95.7)
<b>Net current assets</b>		<b>110.4</b>	99.7
<b>Non-current liabilities</b>			
Borrowings	25	(129.1)	(79.7)
Lease liabilities	18	(22.6)	-
Trade, contract and other payables	24	(3.6)	(5.1)
Retirement benefit obligations	33	(6.7)	(8.5)
Deferred tax liabilities	21	(5.6)	(7.3)
Provisions	20	(3.3)	(3.7)
		<b>(170.9)</b>	(104.3)
<b>Total liabilities</b>		<b>(277.4)</b>	(200.0)
<b>Net assets</b>		<b>149.1</b>	171.9
<b>Equity</b>			
Share capital	28	13.4	13.4
Share premium	28	14.3	14.3
Other reserves	29	17.4	16.9
Retained earnings	30	103.5	126.8
Equity attributable to owners of the parent		<b>148.6</b>	171.4
Non-controlling interests	31	0.5	0.5
<b>Total equity</b>		<b>149.1</b>	171.9

The notes on pages 146 to 191 form an integral part of these Group financial statements.

Approved by the Board of Ricardo plc on 9 September 2020 and signed on its behalf by:

**Dave Shemmans**  
Chief Executive Officer



**Ian Gibson**  
Chief Financial Officer



## Consolidated statement of changes in equity for the year ended 30 June

	Note	Attributable to owners of the parent					Non-controlling interests	Total equity
		Share capital	Share premium	Other reserves	Retained earnings	Total		
		£m	£m	£m	£m	£m		
At 1 July 2018		13.4	14.3	15.7	124.3	167.7	0.4	168.1
Profit for the year		-	-	-	19.8	19.8	0.1	19.9
Other comprehensive income/(expense) for the year		-	-	1.2	(6.4)	(5.2)	-	(5.2)
Total comprehensive income for the year		-	-	1.2	13.4	14.6	0.1	14.7
Equity-settled transactions	34	-	-	-	1.0	1.0	-	1.0
Purchases of own shares to settle awards	30	-	-	-	(0.9)	(0.9)	-	(0.9)
Ordinary share dividends	9	-	-	-	(11.0)	(11.0)	-	(11.0)
At 30 June 2019		13.4	14.3	16.9	126.8	171.4	0.5	171.9
Adoption of IFRS 16 (net of tax)	2	-	-	-	(3.7)	(3.7)	-	(3.7)
At 1 July 2019 (adjusted)		<b>13.4</b>	<b>14.3</b>	<b>16.9</b>	<b>123.1</b>	<b>167.7</b>	<b>0.5</b>	<b>168.2</b>
Loss for the year		-	-	-	(6.5)	(6.5)	0.1	(6.4)
Other comprehensive income/(expense) for the year		-	-	0.5	(1.7)	(1.2)	-	(1.2)
Total comprehensive income/(expense) for the year		-	-	0.5	(8.2)	(7.7)	0.1	(7.6)
Equity-settled transactions	34	-	-	-	0.6	0.6	-	0.6
Purchases of own shares to settle awards	30	-	-	-	(0.5)	(0.5)	-	(0.5)
Ordinary share dividends	9	-	-	-	(11.5)	(11.5)	(0.1)	(11.6)
<b>At 30 June 2020</b>		<b>13.4</b>	<b>14.3</b>	<b>17.4</b>	<b>103.5</b>	<b>148.6</b>	<b>0.5</b>	<b>149.1</b>

The notes on pages 146 to 191 form an integral part of these Group financial statements.

## Consolidated cash flow statement for the year ended 30 June

	<i>Note</i>	<b>2020</b>	2019
		<b>£m</b>	£m
<b>Cash flows from operating activities</b>			
(Loss)/profit before tax		<b>(5.3)</b>	26.5
Adjustments for:			
Share-based payments	34	<b>0.6</b>	1.0
Fair value losses/(gains) on derivative financial instruments	26	<b>0.3</b>	(0.8)
Loss on disposal of property, plant and equipment	4	<b>(1.0)</b>	(0.7)
Net finance costs	10	<b>4.4</b>	2.6
Depreciation, amortisation and impairment	16, 17 & 18	<b>30.3</b>	15.4
Operating cash flows before movements in working capital		<b>29.3</b>	44.0
Increase in inventories		<b>(5.6)</b>	(1.2)
Decrease/(increase) in trade, contract and other receivables		<b>25.4</b>	(5.2)
Decrease in trade, contract and other payables		<b>(12.3)</b>	(1.1)
Increase in provisions		<b>1.0</b>	0.2
Defined benefit pension scheme payments in excess of past service costs	33	<b>(4.6)</b>	(4.3)
Cash generated from operations		<b>33.2</b>	32.4
Net finance costs		<b>(4.2)</b>	(2.3)
Income tax paid		<b>(5.3)</b>	(4.9)
Net cash generated from operating activities		<b>23.7</b>	25.2
<b>Cash flows from investing activities</b>			
Acquisitions of subsidiaries, net of cash acquired	14	<b>(4.3)</b>	(18.9)
Purchases of property, plant and equipment	17	<b>(22.0)</b>	(7.6)
Proceeds from disposal of property, plant and equipment		<b>2.8</b>	0.7
Purchases of intangible assets and capitalised development costs	16	<b>(9.2)</b>	(9.1)
Net cash used in investing activities		<b>(32.7)</b>	(34.9)
<b>Cash flows from financing activities</b>			
Purchases of own shares to settle awards		<b>(0.6)</b>	(0.9)
Principal element of lease payments		<b>(5.6)</b>	-
Principal element of lease receivables		<b>0.2</b>	-
Proceeds from borrowings	25	<b>140.3</b>	64.7
Repayment of borrowings	25	<b>(90.7)</b>	(34.8)
Dividends paid to shareholders	9	<b>(11.6)</b>	(11.0)
Net cash generated from financing activities		<b>32.0</b>	18.0
Effect of exchange rate changes on cash and cash equivalents		<b>0.4</b>	0.3
<b>Net increase in cash and cash equivalents</b>	25	<b>23.4</b>	8.6
Net cash and cash equivalents at 1 July		<b>32.4</b>	23.8
<b>Net cash and cash equivalents at 30 June</b>		<b>55.8</b>	32.4
<b>At 1 July</b>			
Cash and cash equivalents		<b>36.3</b>	33.1
Bank overdrafts		<b>(3.9)</b>	(9.3)
Net cash and cash equivalents at 1 July		<b>32.4</b>	23.8
<b>At 30 June</b>			
Cash and cash equivalents	25	<b>66.3</b>	36.3
Bank overdrafts	25	<b>(10.5)</b>	(3.9)
<b>Net cash and cash equivalents at 30 June</b>		<b>55.8</b>	32.4

The notes on pages 146 to 191 form an integral part of these Group financial statements.



# Notes to the Group financial statements

## 1. Principal accounting policies

This section describes the critical accounting judgements and estimates that management has identified as having a potentially material impact on the Group's consolidated financial statements and sets out our significant accounting policies. Where an accounting policy is generally applicable to a specific note to the financial statements, the policy is cross referenced. We have also detailed below the new accounting pronouncements that we will adopt in future years and our current view of the impact they will have on our financial reporting.

Ricardo plc, a public company limited by shares, is listed on the London Stock Exchange and incorporated and domiciled in the United Kingdom. The address of its registered office is Shoreham Technical Centre, Shoreham-by-Sea, West Sussex, BN43 5FG, England, United Kingdom, and its registered number is 222915.

### a) Basis of preparation

These consolidated financial statements of the Ricardo plc Group ('Group') have been prepared in accordance with International Financial Reporting Standards ('IFRS') as adopted by the European Union ('EU'), IFRS Interpretations Committee ('IFRS IC') interpretations adopted by the EU and the Companies Act 2006 applicable to companies reporting under IFRS. The financial statements have been prepared on a going concern basis under the historical cost convention, as modified by financial assets and financial liabilities which are measured at fair value through profit or loss. Derivative instruments are measured at fair value through other comprehensive income for the effective element of the hedge, with the ineffective element being charged to the profit or loss.

The principal accounting policies applied in the preparation of these financial statements have been consistently applied to the years ended 30 June 2019 and 30 June 2020, except for the Group's accounting policy for leases as disclosed in Note 1(n). Under the transition method chosen, comparative information has not been restated for IFRS 16 *Leases*, which was adopted as at 1 July 2019. Comparative information complies with the Group's accounting policy for leases under IAS 17 *Leases*, the changes from which are also disclosed in Note 1(n).

In the context of the current COVID-19 outbreak, the Board of Ricardo plc has undertaken an assessment of the ability of the Group and Company to continue in operation and meet its liabilities as they fall due over the period of its assessment. In doing so, the Board considered events throughout the period of their assessment, including the availability and maturity profile of the Group's financing facilities and covenant compliance. These financial statements have been prepared on the going concern basis which the directors consider appropriate for the reasons set out below.

The Group funds its operations through cash generated by the Group and has access to a £200m Revolving Credit Facility ("RCF") which is linked to two covenants. These covenants are tested at 30 June and 31 December each year until the debt matures in July 2023.

On 5 May 2020 the Group exercised £50m of the accordion option of its banking facilities, thereby increasing the Revolving Credit Facility to £200m. At the same time, the Directors successfully negotiated a relaxation of one of the related covenants, the Adjusted Leverage (defined as net debt over underlying EBITDA), by increasing the threshold from 3.0x to 3.75x for the next test date, being 31 December 2020. On 9 September 2020 this covenant was further relaxed as the calculation was amended to be based on two times the six-month EBITDA to December 2020. It was also agreed that the June 2021 covenant would be relaxed to 3.75x. The other financial covenant linked to the Revolving Credit Facility is Interest Cover which remains at 4.0x for each test date.

As at the date of approval of these financial statements, the amount of RCF undrawn and available to the Group was c.£70m with total borrowing, including overdrafts, of c.£137m and cash and cash equivalents of c.£58m.

The Directors have prepared a cash flow forecast which covers the period from the date of approval of these financial statements to June 2022. In this forecast, the directors have considered the impact of the COVID-19 outbreak on the Group's results, operations and financial position in a severe but plausible downside scenario, which included the following key assumptions:

- Revenue continues at H2 FY 2019/20 COVID-19 impacted run-rates for the whole of the FY 2020/21 to model the expected prolonged economic downturn due to the COVID-19 pandemic. Relative to actual results reported for the FY 2019/20, the downside scenario assumes a 15% reduction in annual A&I revenue and a 20% reduction in annual Performance Products revenue. Specific sensitivities have also been applied to model the potential impact of a delay in delivering on key contracts and lower contract volumes in segments including Defense, Rail, and RSC & Software. Given the current market and pipeline of opportunities secured, no sensitivities have been applied to the Energy & Environment revenue. Revenue for the year ended 30 June 2022 is projected to increase by 9% on the sensitised June 2021 levels, which is largely driven by increased volumes in Defense and Performance Products.
- An increase in the Group's working capital days of ten, to model the potential impact of a continuation of the slow-down in project delivery, combined with delayed receipts from customers.
- The non-payment of the FY 2019/20 final dividend in November 2020.

The modelled scenario incorporates mitigating actions which are within the control of the Group, such as the non-payment of discretionary bonuses, discretionary cost saving measures (including travel and professional fees), a temporary freeze on recruitment, and a reduction in non-essential capital expenditure.

Although headroom under the Group's banking covenants is reduced under this downside scenario, the group and company is expected to operate within its committed facilities and covenant requirements during the forecast period.

Consequently, the directors are confident that the Group and company will have sufficient funds to continue to meet its liabilities as they fall due for at least 12 months from the date of approval of the financial statements and therefore have prepared the financial statements on a going concern basis.

### b) Basis of consolidation

The financial statements of the Group consolidate the results of the Company and its subsidiary entities, and include its share of its joint ventures' results accounted for under the equity method. Subsidiaries are all entities (including structured entities) over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Subsidiaries are fully consolidated from the date on which control is transferred to the Group and are deconsolidated from the date that control ceases. Intercompany transactions and balances are eliminated on consolidation.

The Group applies the acquisition method of accounting for business combinations. The consideration transferred for an acquisition is the fair value of the assets acquired and the liabilities assumed. The consideration transferred includes the fair value of any asset or liability resulting from a contingent consideration arrangement. Changes in fair value of contingent consideration are included within specific adjusting items. Contingent consideration dependent upon the employment or retention of specific individuals is expensed over the specified period and included within specific adjusting items. Identifiable assets acquired, together with liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date. Acquisition-related expenditure is expensed as incurred and recognised within specific adjusting items.

## 1. Principal accounting policies (continued)

### c) Management judgements and key accounting estimates

The preparation of financial statements under IFRS requires the Group's management to make judgements and estimates that affect the application of accounting policies and the reported amounts of assets, liabilities, revenues and costs. These judgements and estimates are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

#### Critical judgements in applying the Group's accounting policies

The following are the critical judgements, apart from those involving estimations (which are dealt with separately below), that the Directors have made in the process of applying the Group's accounting policies and that have the most significant effect on the amounts recognised in the financial statements:

##### *Specific adjusting items: Reorganisation costs – Note 3 and Note 7*

Reorganisation costs relate to non-recurring expenditure incurred as part of fundamental restructuring activities, significant impairments of property, plant and equipment, and other items deemed to be one-off in nature. These costs are presented within specific adjusting items in the income statement. The classification and presentation of these items require significant judgement to determine the nature and intention of the transaction. Details of the Group's alternative performance measures and specific adjusting items are included in Note 3 and Note 7.

##### *Carrying value of Goodwill: CGUs – Note 15*

Significant judgement is applied in order to allocate goodwill to cash-generating units ('CGU's), or a group of CGUs, as a change in the allocation of goodwill would impact the result of the impairment review. As set out in Note 1(k), for the purpose of impairment testing, goodwill acquired in a business combination is allocated to each of the CGUs, or groups of CGUs, that is expected to benefit from that business combination, at the lowest level at which goodwill is monitored for internal management purposes. The Rail segment comprises several CGUs which have been grouped for impairment testing purposes as they are expected to benefit from the synergies of the relevant combinations.

##### *Recoverability of capitalised development costs – Note 16*

Judgement is required as to when development costs meet the criteria to be recognised as intangible assets. The majority of capitalised development costs relate to the development of software, products and other technology, tools and processes. These costs are recognised as an asset once it has been determined that the attributable expenditure can be measured reliably, that there is an intention and the necessary resources to complete development and that it is considered probable that the resulting asset will generate future economic benefits for the Group. Determining whether it is probable that the resulting asset will generate sufficient economic benefits in the future requires management judgement.

##### *Impairment of financial assets – Note 23*

Management has applied judgement to rebut the presumption of IFRS 9 Financial Instruments that default does not occur later than a financial asset is 90 days past due. This is based upon the Group's customer profile and limited experience of bad debts, which demonstrates that although debts can become significantly overdue, they are rarely irrecoverable. The default rate used for each overdue period is reassessed annually and is based upon the Group's historic ageing profile, adjusted for forward looking information.

#### Key sources of estimation uncertainty

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods. The areas involving significant risk of a material adjustment to the carrying amounts of assets and liabilities within the next financial year are as follows:

##### *Revenue recognition on fixed price contracts – Note 6*

The majority of the Group's revenue is earned from contracts for the provision of consultancy services that are typically awarded on a fixed price basis. A small number of similar contracts are also entered into by Performance Products to design and set up production lines and supply chains. Services provided under a fixed price contract generally have a single distinct performance obligation, or a single distinct series of performance obligations, which is satisfied over time. For each distinct performance obligation recognised over time, revenue is recognised using an input method, based on total costs incurred to date as a percentage of total estimated costs to satisfy each performance obligation.

The identification of and separate accounting for distinct performance obligations within the context of a contract is considered to be a critical judgement. Fixed price contracts often have multiple performance obligations that are indistinct from one another within the context of the contract. This is due to a homogeneous pattern of transfer of control to the customer who is unable to benefit from the performance of less than all of the promises set out in the contract. This is particularly the case where any intellectual property created is stipulated as not being owned by the customer until the full transaction price has been paid.

The percentage of completion basis of revenue recognition is determined as actual costs incurred as a proportion of total forecast contract costs to complete. This method places importance on the accuracy of uncertain estimates, including total costs to complete, the outcome of contract and technical risks, as well as the extent to which variation requests are recognised for proposed changes to the agreed schedule, price or scope of a contract under negotiation with a customer at the reporting date. Changes in these estimates may impact revenue recognised at the reporting date with the revenue recognition in the reporting period appropriately adjusted as required.

The actual outcome of wholly or partially unsatisfied performance obligations may differ to the estimate made at a reporting date and it is reasonably possible that outcomes on these contracts within the next reporting period could differ, adversely or favourably, in aggregate to those estimated. It is not possible to fully quantify the expected impact of this, but the estimated costs to complete reflect management's best estimate at that point in time and no individual estimate is expected to have a materially different outcome.

As set out further on pages 38 and 100, management undertakes a process to assess the risks on inception of all fixed price contracts, then monitors and reviews the risks and performance of contracts as they progress to completion. The highest value, highest risk, most technically complex and financially challenging contracts to deliver, as measured against a number of quantitative and qualitative factors, are categorised as 'Red Category 4' contracts, which are subject to more frequent and senior levels of management review.

As at 30 June 2020, the number of live contracts within the portfolio was in excess of 2,400 (2019: 3,000), with a total value in excess of £750m (2019: £700m). Of this portfolio of contracts, 6 contracts (2019: 7) were categorised as Red Category 4. At 30 June 2020, £7.8m (2019: £3.9m) of revenue had been recognised in respect of work performed on these contracts which was under negotiation with the customer. Management has made a specific judgement over the ability to recover each of the amounts under negotiation and has recognised provisions of £2.9m (2019: £1.7m) against this revenue, resulting in a net exposure of £4.9m (2019: £2.2m). The possible financial outcomes from these negotiations range from an upside of £2.9m, if management recovers the full £7.8m of revenue, to a downside of £4.9m, if management is unsuccessful in recovering any of the £7.8m.

## 1. Principal accounting policies (continued)

### c) Management judgements and key accounting estimates (continued)

#### *Acquisition accounting - Note 14(b)*

The fair value of contingent consideration payable for post-acquisition financial performance of acquired businesses against agreed targets during an earn-out period, as defined by a sale and purchase agreement, requires judgement and is based on a probability-weighted and discounted assessment as at the acquisition date and recognised at the reporting date as goodwill. The difference between goodwill recognised and earn-out payments made, together with any arrangement that is wholly or partially contingent on the continuing employment of specific individuals, is charged to the income statement as a specific adjusting item as incurred on a pro rata basis, as set out in Note 7. The use of different assumptions could change the fair value of contingent consideration recognised as goodwill and the amounts chargeable to the income statement. Any changes in fair value are recognised within specific adjusting items.

Other intangible assets include acquired intangible assets which primarily relate to customer contracts and relationships arising from business combinations. The significance of these assets relative to the Group's financial position requires critical judgements to be exercised in their identification, initial recognition and subsequent measurement. The identification of these assets separable from goodwill and their expected useful lives are considered as part of pre-acquisition due diligence processes and post-acquisition activities carried out with management of acquired businesses. The fair value of identified acquired intangible assets is determined through the use of appropriate valuation techniques, including the excess earnings method, for which an expectation of discounted future cash flows is derived from a combination of due diligence reports and post-acquisition management forecasts and business plans, together with other readily available sources of financial information. The subsequent amortisation of acquired intangible assets is charged to the income statement as a specific adjusting item, as set out in Note 7. The use of different assumptions could change the fair value used in the initial recognition of acquired intangible assets and the amounts chargeable to the income statement within specific adjusting items.

The fair value of contingent consideration in relation to the acquisition of Transport Engineering (see Note 14(b)) is dependent on the performance of the acquired business compared to agreed targets. If the business does not achieve these agreed targets the impact on the future periods would be a reversal of an expense of £2.7m. If the business does achieve these targets the impact on the future periods would be an additional expense of £1.2m. These adjustments would be recognised in the income statement within specific adjusting items.

#### *Carrying value of Goodwill – Note 15*

In performing the impairment assessment of the carrying amount of goodwill, the recoverable amounts of the CGUs, or groups of CGUs, to which goodwill has been allocated are determined using value-in-use ("VIU") calculations (see Note 1(k)).

The recoverable amount of each CGU, or group of CGUs, is calculated by assessing its value in use, which is determined by performing discounted future pre-tax cash flow calculations for a three-year period and projected into perpetuity. Significant judgements are used to estimate the operating profit, cash-conversion rate, growth rates and pre-tax discount rates applied in computing the recoverable amounts of different CGUs, or groups of CGUs. The sensitivity of estimates used to calculate the value-in-use of each CGU, or group of CGUs, are discussed in Note 15.

#### *Defined benefit obligation – Note 33*

The Group operates a defined benefit pension scheme that provides benefits to a number of current and former employees. This scheme is closed to new entrants and the accrual of future benefits for active members ceased at the end of February 2010. The value of the deficit is particularly sensitive to the market value of the discount rates and actuarial assumptions related to mortality. The sensitivity of the defined benefit obligation to changes in the principal assumptions is set out in Note 33.

### d) Research and development expenditure – Note 4

Research and development expenditure is recognised as an administrative expense in the income statement in the year in which it is incurred. Where the activity is performed for customers the cost is recognised as a cost of sale. Directly attributable development expenditure that meets the criteria for recognition as an intangible asset is described in Note 16.

### e) Government grants – Note 4

The Group receives income-related grants from various national and supranational government agencies, principally for credits in respect of qualifying research and development expenditure, together with funding of research and development and capital projects. The Group also receives employment-related grants. A grant is recognised in the income statement when there is reasonable assurance that the Group will comply with its conditions and that the grant will be received. Grants are presented in the income statement as a deduction from the related expenses.

Grants contributing to the cost of an asset are deducted from the cost of the asset and reflected in depreciation throughout its useful life.

Grants are not normally received until after qualification conditions have been met and the related expenditure has been incurred. Where this is not the case, they are recorded within trade, contract and other payables either as payments received in advance on contracts or as deferred revenue.

### f) Revenue – Note 6

#### **Principle approach**

The Group principally earns revenue through the provision of consultancy services and bespoke products and recognises revenue based on the satisfaction of performance obligations in contracts with its customers. The core principle is that revenue is recognised in a manner that depicts the transfer of promised goods and services to customers in an amount that reflects the consideration to which the Group expects to be entitled in exchange for those goods and services.

A contract with a customer is considered to exist when the Group is in possession of documentation to provide an agreed scope of goods or services on mutually understood terms and conditions that are acceptable to the Group which, subject to the successful execution of the contract, is expected to be invoiced against and paid for by the customer. Each contract with a customer is assessed to identify the promises to transfer distinct goods or services, or a series of distinct goods or services, that are substantially the same and have the same pattern of transfer to the customer. Goods and services are distinct and accounted for as separate performance obligations if they are separately identifiable in the contract and if the customer can benefit from them, either on their own or together with other readily available resources.

The total transaction price for a contract is estimated as the amount of consideration to which the Group expects to be entitled in exchange for transferring the promised goods or services to the customer, excluding sales taxes. Where multiple distinct performance obligations are identified within a contract with a customer, the total transaction price is allocated to each of the distinct performance obligations in proportion to their relative stand-alone selling prices. Given the bespoke nature of many of the Group's products and services, which are designed or manufactured under contract to the customer's individual scope and specifications, there are typically no observable stand-alone selling prices. Instead, stand-alone selling prices are typically estimated based on expected costs plus contract margin.

Costs of fulfilling performance obligations on existing contracts with customers are expensed as incurred. Costs incurred in advance of obtaining a new contract or an anticipated contract that directly relate to the fulfilment of specific performance obligations are initially recognised as an asset and subsequently expensed once the new contract is obtained or obtaining the contract is no longer anticipated. Incremental costs incurred to obtain new contracts with customers are recognised as an asset and amortised consistently with the recognition of revenue over the contract term, providing: the contract term is greater than one year; the costs are only incurred as a direct result of the new contract being obtained; and the costs do not directly relate to the fulfilment of specific performance obligations. Costs incurred to obtain new contracts with



## 1. Principal accounting policies (continued)

### f) Revenue – Note 6 (continued)

#### Principle approach (continued)

customers are expensed when those costs are incurred irrespective of whether a contract is obtained from a customer.

Revenue is recognised as distinct performance obligations are satisfied, and as control of the goods or services is transferred to the customer. For each distinct performance obligation within a contract, the Group determines whether they are satisfied over time or at a point in time. Performance obligations are considered to be satisfied over time if the goods or services provided have no alternative use to the Group and there is an enforceable right to payment for performance completed to date, or the customer simultaneously receives and consumes the goods or services as the Group provides them.

#### Services provided under fixed price contracts

The majority of the Group's revenue is earned from contracts for the provision of consultancy services that are typically awarded on a fixed price basis. A small number of similar contracts are also awarded to Performance Products to design and set up production lines and supply chains. Services provided under a fixed price contract generally have a single distinct performance obligation, or a single distinct series of performance obligations, which is satisfied over time. For each distinct performance obligation recognised over time, revenue is recognised using an input method, based on total costs incurred to date as a percentage of total estimated costs to satisfy each performance obligation.

Revenue and attributable margin are calculated by reference to reliable estimates of transaction price and total expected costs, after making suitable allowances for technical and other risks. Revenue and associated margin are therefore recognised progressively as costs are incurred, and estimated costs to complete are updated regularly as anticipated risks are mitigated or unanticipated risks materialise. The Group has determined that this method faithfully depicts the Group's performance in transferring control of the services to the customer.

The transaction price generally does not include consideration resulting from contract modifications of distinct performance obligations, such as variation orders, until they have been approved by the customer. Variable consideration, such as for the achievement of performance targets or variation requests under negotiation with the customer at the reporting date, can be included in the transaction price together with the estimated costs to perform the associated obligations. These estimates of the expected value or most likely amount are recognised to the extent that it is highly probable that there will not be a significant reversal in the amount of cumulative revenue recognised in a future reporting period.

Changes in transaction price from contract modifications that do not create separate distinct performance obligations are added to the transaction price of pre-existing performance obligations to which the modification relates. Contract modifications for goods or services that do create separate distinct performance obligations are accounted for separately from pre-existing performance obligations, together with the expected costs to satisfy those separate distinct performance obligations.

Contract assets arising from the recognition of revenue as and when performance obligations are satisfied are initially recognised as accrued revenue or amounts recoverable on contracts ('AROC') within trade, contract and other receivables, and transferred to trade receivables when invoiced. Contract liabilities arising from amounts received from customers for services not yet performed are initially recognised as deferred revenue or payments received in advance on contracts ('POA') within trade, contract and other payables, and transferred to revenue as and when performance obligations are satisfied.

A loss on a distinct performance obligation is recognised immediately when it becomes probable that the total estimated directly attributable costs to satisfy the distinct performance obligation will exceed the transaction price allocated to that distinct performance obligation. Monthly reviews of contracts by local management, in conjunction with reviews by senior management of contracts deemed to be of higher risk, ensure that the Group identifies and immediately recognises expected losses on fixed price performance obligations within a contract.

#### Services provided under time and materials contracts

Certain contracts for the provision of consultancy services may be awarded on a time and materials basis. Services provided under a time and materials basis typically have a single distinct performance obligation to provide a variable amount of labour to the customer at an agreed set of time-based labour rates, which represents the sales value. Revenue is therefore recognised over time based upon the agreed sales value of the time worked and costs incurred to date, as the customer simultaneously receives and consumes these services as the Group provides them.

#### Services provided under subscription and software support contracts

Other contracts primarily relate to annual subscriptions by customers to emergency response and support services for chemical incidents and crisis management. Subscription services are considered to be a single distinct performance obligation for which revenue is recognised at the agreed transaction price on a straight-line basis over the period of subscription.

Software maintenance and support services revenue is recognised separately from the supply of software products on a straight-line basis over the period of maintenance and support. Revenue derived from the supply of ad hoc software-related services, such as training and application engineering, is recognised at the agreed transaction price on a straight-line basis over a typically short period during which the obligation is performed.

#### Supply of manufactured or assembled products

The majority of the Group's revenue in Performance Products and Defense is earned from the supply of manufactured or assembled high-performance products, some of which are supplied with assurance-type warranties. Revenue for the supply of these products is measured at the agreed transaction price per unit that is expected to flow to the Group, and is recognised at the point in time that the Group has transferred control of the products to the customer, which is typically on delivery or collection. The point in time at which revenue is recognised can vary based on the specific intercompany terms present in a contract with a customer.

Revenue recognised from bill-and-hold arrangements occurs when all performance obligations have been satisfied and there is a substantive reason for the arrangement, which is typically that the customer has requested the products to be held by the Group until such times as delivery or collection is required by the customer. Revenue is recognised and billed under usual payment terms when the customer formally agrees to accept control of the bespoke products which cannot be sold to another customer and provided that the products have been separately identified and made available for delivery or collection.

#### Supply of software products

The Group's software products are standard version-controlled computer aided design, engineering and analysis tools, available for general sale and are primarily sold through Performance Products. The majority of revenue is derived from new and renewed licences of these software products, for which the customer has the right to access the product during the licence period, including rolling releases of the latest functionality. A new or renewed licence is considered to be a single distinct performance obligation for which revenue is recognised at the agreed transaction price on a straight-line basis over the licence period.

Perpetual licence sales provide the customer with an indefinite right to use the product, excluding rolling releases of the latest functionality. Rolling releases are provided through the separate provision of maintenance and support services. The transaction price of these two distinct performance obligations are separately identifiable within a contract. Revenue is recognised for perpetual licence sales when the performance obligation is satisfied, being the point of delivery of the licence key to the customer.

## 1. Principal accounting policies (continued)

### g) Specific adjusting items – Note 7

Specific adjusting items are disclosed separately in the financial statements where it is necessary to do so to provide further understanding of the financial performance of the Group. These items comprise the amortisation of acquired intangible assets, acquisition-related expenditure, reorganisation costs and other non-recurring items that are included due to the significance of their nature or amount. Acquisition-related expenditure includes the costs of acquisitions, deferred and contingent consideration fair value adjustments (including the unwinding of discount factors), transaction-related fees and expenses, and post-deal integration costs. Reorganisation costs include costs arising from major restructuring activities, profits or losses on the disposal of businesses, and significant impairments of property, plant and equipment.

### h) Dividends – Note 9

Dividends are recognised as a liability in the year in which they are fully authorised. Interim dividends are recognised when paid.

### i) Net finance costs – Note 10

Finance income and finance costs are recognised in the income statement in the period in which they are incurred using the effective interest method.

### j) Income tax expense – Note 12

The tax expense for the year comprises current and deferred tax. Tax is recognised in the income statement, except to the extent that it relates to items recognised in other comprehensive income or directly in equity. The current tax charge is the expected tax payable on taxable income for the year, calculated using the average rate applicable for the year on the basis of the tax laws enacted or substantively enacted at the reporting date in the countries where the Group operates. The current tax charge also includes any adjustment to tax payable in respect of previous years.

The Group submits annual claims in respect of the UK Government's Research and Development Expenditure Credit ('RDEC') scheme. RDEC is taxable income and is a form of government grant that effectively gives corporation tax relief on qualifying research and development ('R&D') expenditure. In accordance with IAS 20 Accounting for Government Grants and Disclosure of Government Assistance, credits receivable under the RDEC scheme are offset against the associated qualifying R&D expenditure incurred, both of which are included within operating profit.

The Group have provided for uncertain positions taken in the tax returns with respect to situations in which applicable tax regulation is subject to interpretation and establishes provisions where appropriate on the basis of amounts expected to be paid to the relevant tax authorities. IFRIC 23 Uncertainty over Income Tax Treatments, which provides further guidance on the measurement and provision of uncertain tax positions, became effective for the group from 1 January 2019. IFRIC 23 has been applied retrospectively, although the adoption has not had a transitional impact on reserves as the measurement of the uncertain tax provision included in the prior year accounts is not deemed to be materially different under IFRIC 23.

Uncertain tax positions relate primarily to risks around transfer pricing and on-going tax audits. The Group's provision is based on experience of dealing with Tax Authorities in certain jurisdictions in which it operates and an estimate of the most likely outcomes in each territory.

### k) Goodwill – Note 15

Goodwill arises on the acquisition of subsidiaries and represents the excess of the consideration transferred and the fair value of contingent consideration, over the fair value of the identifiable assets acquired and liabilities assumed. Goodwill arising on acquisitions denominated in foreign currencies is retranslated using exchange rates prevailing at each reporting date.

Goodwill is recognised as an asset and is carried at cost less accumulated impairment losses. It is not subject to amortisation, but is reviewed for impairment annually, or more frequently if events or changes in circumstances indicate a potential impairment. For the purpose of impairment testing, goodwill acquired in a business combination is allocated to each of the CGUs, or group of CGUs, that is expected to benefit from that business combination. Each CGU, or group of CGUs, to which goodwill is allocated represents the lowest level at which goodwill is monitored for internal management purposes and is not larger than an operating segment before aggregation.

The Group's impairment review compares the carrying value of the goodwill to the recoverable amount of the CGU, or group of CGUs, to which the goodwill has been allocated. The recoverable amount is the higher of the value in use or the fair value less costs of disposal. Estimating the value in use requires the Directors to perform an assessment of the discounted future cash flows that the CGU, or group of CGUs, is able to generate. See Note 1 (c) for discussion of the critical estimates involved in this assessment.

An impairment is deemed to have occurred where the recoverable amount of a CGU, or group of CGUs, is less than the carrying value of the allocated goodwill. Any impairment is recognised immediately in the income statement within specific adjusting items and is not subsequently reversed. On disposal of an operation, the attributable amount of goodwill is included in the determination of the gain or loss on disposal.

## l) Other intangible assets – see Note 16

### Acquired intangible assets

Acquired intangible assets that are either separable or arising from contractual rights are recognised at fair value at the date of acquisition, and subsequently at amortised cost. Such intangible assets include customer contracts and relationships, together with acquired software and technology. The fair value of acquired intangible assets is determined by use of appropriate valuation techniques.

### Software

Purchased software is capitalised on the basis of the purchase price of the software product plus any external and internal costs subsequently incurred that are directly attributable to bring the software product to the condition necessary for it to be capable of operating in the manner intended.

### Development costs

Directly attributable costs which are incurred in the development of certain assets are capitalised and amortised over their finite useful lives once the Group has determined that it has the intention and the necessary resources to complete the relevant project, that it is probable the resulting asset will generate economic benefits for the Group and the attributable expenditure can be reliably measured.

### Amortisation

Amortisation is typically calculated using the straight-line method to allocate the cost of intangible assets over their estimated useful lives, as follows:

- Acquisition-related intangible assets:
  - Customer contracts and relationships Between 3 and 9 years
  - Software and technology Between 5 and 7 years
- Software Between 2 and 10 years
- Development costs Between 3 and 5 years

For certain assets classified as development costs in the Group's Defense operating segment, amortisation is charged on a units of production basis, as this is considered to more accurately reflect the expected pattern of consumption of the future economic benefits embodied in the assets. Assets under construction are carried at cost less any impairment in value, and are included in the relevant asset category. Amortisation of these assets commences when they are available for their intended use or sale.

## 1. Principal accounting policies (continued)

### m) Property, plant and equipment – see Note 17

Property, plant and equipment is stated at historical cost less depreciation. The gross cost of an item of property, plant and equipment is the purchase price and any costs directly attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended.

Depreciation is typically calculated using the straight-line method to allocate the cost of items of property, plant and equipment less any residual value, over their estimated useful lives, as follows:

- |   |                            |
|---|----------------------------|
| • Freehold land                             | Not depreciated            |
| • Freehold buildings including improvements | Between 25 and 50 years    |
| • Leasehold property improvements           | Over the term of the lease |
| • Plant and machinery                       | Between 4 and 25 years     |
| • Fixtures, fittings and equipment          | Between 2 and 10 years     |

The residual values and useful lives of assets are reviewed, and adjusted if appropriate, at the end of each reporting period. For certain assets classified as plant and machinery in the Group's Defense operating segment, depreciation is charged on a units of production basis, as this is considered to more accurately reflect the expected pattern of consumption of the future economic benefits embodied in the assets.

Assets under construction are carried at cost less any impairment in value, and are included in the relevant asset category. Depreciation of these assets commences when they are available for their intended use or sale.

#### Government Grants

Grants contributing to the cost of an asset are deducted from the cost of the asset and reflected in its depreciation throughout its useful life.

### n) Leases – see Note 18

The Group's accounting policy for leases under IAS 17 *Leases* was disclosed in Note 1(j) to the financial statements in the Annual Report & Accounts 2018/19.

The Group's policy for leases as of 1 July 2019 under IFRS 16 *Leases*, is as follows:

#### Definition of a lease

Under IFRS 16, a contract is, or contains, a lease if the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration.

#### Lessee accounting

At the lease commencement date, a right-of-use asset is recognised for the leased item with a corresponding lease liability for any payments due. The right-of-use asset is initially measured at cost, being the present value of the lease payments paid or payable (net of any incentives received from the lessor), plus any initial direct costs and/or restoration costs.

Right-of-use assets are depreciated on a straight-line basis from the commencement date of the lease to the earlier of the end of the asset's useful life or the end of the lease term. The lease term is the non-cancellable period of the lease plus any periods for which the Group is 'reasonably certain' to exercise any extension options. If right-of-use assets are considered to be impaired, the carrying value is reduced accordingly.

For assets where the lessor transfers ownership of the underlying asset to the Group by the end of the lease term, or where the lease contains a purchase option at a nominal/notional value, then these assets will be initially classified as property, plant and equipment, and subsequently follow the depreciation rules set out in Note 1(m) to the financial statements in the Annual Report & Accounts 2018/19).

The lease liability is initially measured at the value of future lease payments, discounted using the interest rate implicit in the lease. Where

this rate is not determinable, the Group's incremental borrowing rate is used, which is then adjusted to reflect an estimate of the interest rate the Group would have to pay to borrow the amount necessary to obtain an asset of similar value, in a similar economic environment, and with similar terms and conditions.

After initial recognition, the lease liability is recorded at amortised cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate (e.g. an inflation related increase) or if the Group's assessment of the lease term changes. Any change in the lease liability as a result of these changes also results in a corresponding change in the recorded right-of-use asset.

Payments in respect of short-term and/or low-value leases continue to be charged to the income statement on a straight-line basis over the lease term.

#### Lessor accounting

The Group determines at inception of the lease whether the lease is a finance or an operating lease. When a lease transfers substantially all the risks and rewards of ownership of the underlying asset to the lessee then the lease is classified as a finance lease; otherwise, the lease is classified as an operating lease. Where the Group is an intermediate lessor, the interest in the head lease and the sub-lease is accounted for separately and the lease classification of a sub-lease (finance or operating) is determined by reference to the right-of-use asset arising from the head lease, not with reference to the underlying asset. This is the only substantive change for lessor accounting from IAS 17 to IFRS 16.

This resulted in one significant operating lease being reclassified as a finance lease. This is presented in other receivables and measured at fair value on transition to IFRS 16. The other sub-leased assets are all classified as operating leases, where payments received (net of any incentives granted by the Group) are recognised in the income statement on a straight-line basis over the lease term.

### o) Non-current assets classified as held for sale – see Note 19

Non-current assets are classified as held for sale when their carrying amount is to be recovered principally through a sale transaction, rather than through continuing use, and a sale is considered highly probable within twelve months of their classification as held for sale. They are stated at the lower of their carrying amount and fair value less costs to sell. An impairment loss is recognised in the income statement for any initial or subsequent write-down of the assets to fair value less costs to sell. A gain is recognised in the income statement for any subsequent increases in fair value less costs to sell an asset, but not in excess of any cumulative impairment losses previously recognised.

A gain or loss not previously recognised by the date of the sale of the non-current assets is recognised in the income statement at the date of derecognition. Non-current assets are not depreciated or amortised while they are classified as held for sale and are presented separately from other non-current assets.

### p) Provisions for liabilities and charges – see Note 20

Provisions are required for restructuring costs and employment-related benefits when the Group has a present legal or constructive obligation at the reporting date as a result of a past event and it is probable that settlement will be required of an amount that can be reliably estimated. Provisions for warranty costs are recognised at the date of sale of the relevant products, at the Directors' best estimate of the expenditure required to settle the Group's probable liability.

Other provisions reflect the Directors' best estimate of future obligations relating to legal claims and litigation, together with dilapidation costs for the maintenance of leasehold properties arising from past events such as lease renewals or terminations. These estimates are reviewed at the reporting date and updated as necessary.



## 1. Principal accounting policies (continued)

### q) Deferred tax – Note 21

Deferred tax is recognised on temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax liabilities are not recognised if they arise from the initial recognition of goodwill. Deferred tax is not accounted for if it arises from the initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit and differences relating to investments in subsidiaries to the extent that it is not probable that they will reverse in the foreseeable future. The amount of deferred tax provided is based on the expected manner of realisation or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the reporting date.

Deferred tax assets are recognised only to the extent that it is probable that taxable profits will be available in the foreseeable future against which the asset can be utilised. Deferred tax assets are reduced to the extent that it is no longer probable that the related tax benefit will be realised within the foreseeable future.

### r) Inventories – Note 22

Inventories are stated at the lower of cost, including attributable overheads allocated on the basis of normal operating capacity, and net realisable value. Cost is calculated using the 'weighted average' method across the Group apart from Performance Products and Defense which are on a 'first-in, first-out' method.

### s) Trade, contract and other receivables – Note 23

Trade receivables are stated net of impairment and for the purposes of impairment testing includes the non-financial contract assets of amounts recoverable on contracts ('AROC') and accrued revenue. These assets are assessed for impairment using the 'simplified approach' to the 'expected credit loss' ('ECL') model, which applies a 'default rate' at the point of origination that increases as the unpaid asset ages. The 'simplified approach' of IFRS 9 applies a 'default rate' to trade receivables and contract assets, which considers both past experience and future expectations of credit losses. Although past experience of significant credit losses on these assets has been negligible, the impairment assessment considers both past experience and future expectations of credit losses. As a result of this assessment, the Group considers the risk of expected credit losses on contract assets to be immaterial.

For the requiring an assessment of the ECL over the lifetime of the asset using a historical provision matrix to create a group wide 'default rate' which together with past events is also adjusted for current conditions and forecasts of future economic conditions. To calculate the Group default rates a weighted average default rate for each division was taken. It is the Group's judgement that it is appropriate for Ricardo to use one set of default rates across the Group as our international credit rating and geographical profile is sufficiently similar across the globe. The customer base across the Group is sufficiently homogenous as each division's customers are primarily comprised of large corporations and historical provision matrixes are sufficiently homogenous.

Trade receivables and contract assets are provided in full and subsequently written off when there is no reasonable expectation of recovery. Indicators that there may be no reasonable expectation of recovery could include, amongst others, evidence that the customer has entered administration or liquidation proceedings, or the persistent failure of a customer to enter into or adhere to a repayment plan. The 'general approach' is applied to the impairment of other financial assets, the amount of which is based on whether there has been a significant deterioration in the credit risk of a financial asset.

### t) Trade, contract and other payables – Note 24

Trade payables are not interest-bearing and are stated at their nominal value.

### u) Net debt and borrowings – Note 25

Cash and cash equivalents comprise cash balances and bank overdrafts repayable on demand. Bank overdrafts are shown within borrowings in current liabilities and bank loans and finance leases are shown within borrowings in either current liabilities or noncurrent liabilities depending on the maturity date.

Financial liabilities are classified as either amortised cost or fair value through profit and loss. Borrowings are recognised initially at fair value net of direct issue costs and subsequently at amortised cost. Differences between initial value and redemption value are recorded in the income statement over the period of the loan. The fair value of borrowings due for repayment after more than one year approximates to the carrying value as they are primarily floating rate loans where payments are reset to market rates at regular short-term intervals

### v) Fair value of financial assets and liabilities – Note 26

The Group uses derivative financial instruments, including foreign exchange contracts, to mitigate currency exposures on trading transactions. Fair values of derivative financial instruments are based on the market values of similar instruments at the reporting date.

The Group designates the fair value of foreign currency swap contracts on intercompany loans as hedging instruments. The initial fair value is determined with reference to the relevant spot market exchange rate. The differential between the contracted strike rate and the discounted spot market exchange rate is defined as the movement in fair value. The effective element of the hedge's fair value gains and losses on the remeasurement of cash flow derivatives are hedge accounted and recognised in retained earnings through other comprehensive income. The ineffective element of the hedge's fair value gains and losses on the remeasurement of cash flow derivatives are recognised in retained earnings through the income statement.

The Group hedges the entire carrying value of all intercompany loans denominated in foreign currencies, on which credit risk is considered to be immaterial. Therefore, only when the economic relationship fails or ceases to exist would the Group recognise the net financial impact of the hedging instrument and the hedged item as ineffective in the income statement. Changes in fair value of foreign currency forward and option contracts that relate to hedged items are recognised in retained earnings through the income statement, together with the change in the fair value of the related hedge at the reporting date.

### Short-term borrowings and deposits

The fair value of short-term deposits, loans and overdrafts approximates to the carrying amount because of the short maturity of these instruments.

### Long-term borrowings

The fair value of borrowings approximates to the carrying amount as they are primarily floating rate loans where payments are reset to market rates at regular intervals.

### Derivatives

Derivative financial instruments are initially recognised and measured at fair value on the date a derivative contract is entered into and subsequently measured at fair value on the reporting date. Fair value is estimated by discounting expected future contractual cash flows using prevailing interest rate curves. Amounts denominated in foreign currencies are valued at the exchange rate prevailing at the reporting date (Level 2 of the fair value hierarchy within IFRS 13 Fair Value Measurement). Measurement of all derivative financial instruments was taken to the income statement.

## 1. Principal accounting policies (continued)

### w) Retirement benefits – Note 33

The Group operates one defined benefit and several defined contribution pension schemes, the assets of which are held in separately administered funds. The defined benefit pension scheme is closed to new entrants and the accrual of future benefit for active members ceased at the end of February 2010. Payments to defined contribution pension schemes are charged as an expense as they fall due. Differences between contributions payable in the year and contributions actually paid are included in either accruals or prepayments. Payments to state-managed pension schemes are dealt with as payments to defined contribution pension schemes as the Group's obligations under the schemes are similar in nature.

For the defined benefit pension scheme, the cost of providing benefit is determined using the projected unit credit method, with actuarial valuations being carried out at each reporting date. Remeasurements are recognised in other comprehensive income except where they result from settlements or curtailments, in which case they are reported in the income statement.

Where necessary, past service costs are recognised immediately in the income statement at the earlier of when the plan amendment or curtailment occurs and when the related restructuring costs or termination benefit are recognised. The defined benefit obligation recognised represents the present value of the pension scheme liabilities net of the fair value of scheme assets. Any asset resulting from this calculation is limited to past service cost, plus the present value of available refunds and reductions in future contributions to the plan.

The interest cost on the net defined benefit obligation for the year is determined by applying the discount rate used to measure the defined benefit obligation at the beginning of the year to the net defined benefit obligation at the end of the year, and is included in finance costs.

### x) Share-based payments – Note 34

Equity-settled share-based payments are measured at fair value at the date of grant. The fair value determined at the grant date is expensed on a straight-line basis over the vesting period. The amount expensed is adjusted over the vesting period for changes in the estimate of the number of shares that will eventually vest, save for changes resulting from any market-related performance conditions.

Cash-settled share-based payments are measured at fair value at the date of grant and expensed over the vesting period until the vesting date with the recognition of a corresponding liability. The liability is remeasured to fair value at each reporting date up to and including the settlement date, with changes in fair value recognised in the income statement for the year. The amount expensed is adjusted over the vesting period for changes in the estimate of the number of shares that will eventually vest. Fair value is measured by using the Monte Carlo and Black Scholes models. The expected life used in the models are adjusted for the effects of exercise restrictions and behavioural considerations.

### y) Foreign currency

#### Transactions

The functional currency of the Company and the presentation currency of the Group is Pounds Sterling. The functional currency of each subsidiary is the currency of the primary economic environment in which the entity operates. Transactions in currencies other than the functional currency are recorded at prevailing exchange rates. At each reporting date, monetary assets and liabilities denominated in foreign currencies are retranslated at the rates prevailing on the reporting date. Non-monetary assets and liabilities denominated in foreign currencies are translated at the rates prevailing at the date when the transaction occurred. Gains and losses arising on retranslation and settlements are included in the income statement for the year.

#### Consolidation

On consolidation the assets and liabilities of foreign operations, including goodwill and fair value adjustments, are translated into the presentation currency at exchange rates prevailing on the reporting date. Revenues and costs are translated at the average exchange rates of the year unless

exchange rates fluctuate significantly. All resulting exchange differences are recognised in other comprehensive income and the translation reserve within equity. On disposal of an operation, or part thereof, the related cumulative translation differences are recognised in the income statement as a component of the gain or loss arising on disposal.

### z) Recent accounting developments

#### Adopted by the group

IFRS 16 *Leases* became effective for the Group from 1 July 2019. The impact of adoption is set out in Note 2.

The following other standards, interpretations and amendments to existing standards became effective on 1 January 2019 and have not had a material impact on the Group:

	Effective date (period commencing)	Endorsed by EU
<i>Amendments and Interpretations to IFRS</i>		
- IFRIC 23 <i>Uncertainty over Income Tax Treatments</i>	1 Jan 2019	Yes
<i>IFRS 9 Financial Instruments:</i>		
Prepayment Features with Negative Compensation	1 Jan 2019	Yes
<i>IAS 28 Investment in Associates and Joint Ventures:</i>		
Long-term Interests in Associates and Joint Ventures	1 Jan 2019	Yes
<i>IAS 19 Employee Benefits:</i>		
Plan Amendment, Curtailment or Settlement	1 Jan 2019	Yes
<i>Annual Improvements to IFRS Standards 2015-2017 Cycle:</i>		
IFRS 3 <i>Business Combinations</i> , IFRS 11 <i>Joint Arrangements</i> , IAS 12 <i>Income Taxes</i> and IAS 23 <i>Borrowing Costs</i> .	1 Jan 2019	Yes

#### Issued standards, amendments and interpretations not yet effective

The following other standards, interpretations and amendments to existing standards have been issued but were not mandatory for accounting periods beginning on 1 January 2020 and are not expected to have a material impact on the Group:

	Effective date (period commencing)	Endorsed by EU
<i>Issued IFRS</i>		
- IFRS 17 <i>Insurance Contracts</i>	1 Jan 2021	No
<i>Amendments and Interpretations to IFRS</i>		
- IFRS 3 <i>Business Combinations:</i> Definition of a business	1 Jan 2020	Yes
- IFRS 9 <i>Financial Instruments</i> , IAS 39 <i>Financial Instruments: Recognition and Measurement</i> and IFRS 17 <i>Insurance Contracts: Interest Rate Benchmark Reform</i>	1 Jan 2020	Yes
- IAS 1 <i>Presentation of Financial Statements</i> and IAS 8 <i>Accounting Policies, Changes in Accounting Estimates and Errors: Definition of Material</i>	1 Jan 2020	Yes
- Amendments to References to the Conceptual Framework in IFRS Standards	1 Jan 2020	Yes
- IAS 1 <i>Presentation of Financial Statements: Classification of Liabilities as Current or Non-Current</i>	1 Jan 2022	No

## 2. Changes in significant accounting policies

### IFRS 16 Leases

#### Transition method

The Group adopted the modified retrospective approach to transition, with the option being taken to recalculate the value of eight materially significant leased property assets while recognising the remaining leased assets at an amount equal to the liability on transition, adjusted for any prepaid or accrued lease expenses. Under this approach the Group has not restated comparative financial information, which remains presented under IAS 17. For the eight leased property assets which have been recalculated, the Group has elected to measure the right-of-use asset as if IFRS 16 had been applied since the start of the lease, but using the incremental borrowing rate at 1 July 2019, with the difference between the right-of-use asset and the lease liability taken to retained earnings on transition.

The Group has elected to adopt the following practical expedients on transition:

- not to capitalise a right-of-use lease asset or related lease liability where the lease expires before 30 June 2020;
- not to reassess contracts to determine if the contract contains a lease nor to separate lease and non-lease components;
- to use hindsight in determining the lease term;
- to exclude initial direct costs from the measurement of the right-of-use asset; and
- to apply the portfolio approach where a group of leases has similar characteristics.

The weighted average lessee's incremental borrowing rate applied to lease liabilities recognised at the date of initial application are the same as described in Note 18.

As at 1 July 2019	Notes	Previously reported £m	IFRS 16 transitional adjustment £m	Adjusted under IFRS 16 £m
<b>Assets</b>				
<b>Non-current assets</b>				
Right-of-use assets	18	-	37.1	37.1
Other receivables	18	-	2.3	2.3
Deferred tax assets	21	6.7	1.1	7.8
<b>Total non-current assets</b>		<b>176.5</b>	<b>40.5</b>	<b>217.0</b>
<b>Current assets</b>				
Trade, contract and other receivables		141.4	(0.5)	140.9
<b>Total current assets</b>		<b>192.5</b>	<b>(0.5)</b>	<b>192.0</b>
<b>Total current assets and non-current assets held for sale</b>		<b>195.4</b>	<b>(0.5)</b>	<b>194.9</b>
<b>Total assets</b>		<b>371.9</b>	<b>40.0</b>	<b>411.9</b>
<b>Liabilities</b>				
<b>Current liabilities</b>				
Lease liabilities	18	-	(4.7)	(4.7)
Trade, contract and other payables		(84.8)	1.4	(83.4)
<b>Total current liabilities</b>		<b>(95.7)</b>	<b>(3.3)</b>	<b>(99.0)</b>
<b>Net current assets</b>		<b>99.7</b>	<b>(3.8)</b>	<b>95.9</b>
<b>Non-current liabilities</b>				
Lease liabilities	18	-	(40.9)	(40.9)
Provisions	20	(3.7)	0.5	(3.2)
<b>Total non-current liabilities</b>		<b>(104.3)</b>	<b>(40.4)</b>	<b>(144.7)</b>
<b>Total liabilities</b>		<b>(200.0)</b>	<b>(43.7)</b>	<b>(243.7)</b>
<b>Net assets</b>		<b>171.9</b>	<b>(3.7)</b>	<b>168.2</b>
<b>Equity</b>				
Retained earnings	30	126.8	(3.7)	123.1
Equity attributable to owners of the parent		171.4	(3.7)	167.7
<b>Total equity</b>		<b>171.9</b>	<b>(3.7)</b>	<b>168.2</b>

#### Reconciliation between operating lease commitments and lease liabilities

The following table explains the differences between the operating lease commitments disclosed applying IAS 17 at 30 June 2019 and the lease liabilities recognised on transition to IFRS 16 on 1 July 2019.

	£m
Total operating lease commitments under IAS 17 at 30 June 2019	61.2
Discounting	(12.9)
Exempt lease payments	(0.8)
Non-lease component payments	(1.9)
Lease liabilities recognised on transition to IFRS 16 at 1 July 2019	45.6

Exempt lease payments are short term or low value leases which per the Group's lease policy are not included within the lease liability recognised on the statement of financial position. Non-lease component payments are service charges which were built into the lease and included within the operating lease commitment as at 30 June 2019. These are not included within the lease liability under the Group's lease policy.



### 3. Alternative performance measures

Throughout this document the Group presents various alternative performance measures ('APMs') in addition to those reported under IFRS. The measures presented are those adopted by the Chief Operating Decision Maker ('CODM', deemed to be the Chief Executive Officer), together with the main Board, and analysts who follow us in assessing the performance of the business. Explanations of how they are calculated and how they are reconciled to an IFRS statutory measure are set out below.

#### a) Group profit and earnings measures

**Underlying profit before tax ('PBT') and underlying operating profit:** These measures are used by the Board to monitor and measure the trading performance of the Group. They exclude certain items which the Board believes distort the trading performance of the Group. These include the amortisation of acquired intangibles, acquisition-related expenditure, reorganisation costs, and other specific adjusting items.

The Group's strategy includes geographic and sector diversification, including targeted acquisitions and disposals. By excluding acquisition-related expenditure from underlying PBT and underlying operating profit, the Board has a clearer view of the performance of the Group and is able to make better operational decisions to support its strategy.

Acquisition-related expenditure includes the costs of acquisitions, deferred and contingent consideration fair value adjustments (including the unwinding of discount factors), transaction-related fees and expenses, and post-deal integration costs.

Reorganisation costs arising from major restructuring activities, profits or losses on the disposal of businesses, and significant impairments of property, plant and equipment, are excluded from underlying PBT and underlying operating profit as they are not reflective of the Group's trading performance in the year, as are any other specific adjusting items deemed to be one-off in nature.

The related tax effects on the above and other tax items which do not form part of the underlying tax rate are also taken into account. Items are treated consistently year-on-year, and these adjustments are also consistent with the way that performance is measured under the Group's incentive plans and its banking covenants. A reconciliation is shown below. Further details of the nature of the specific adjusting items are given in Note 7.

#### Reconciliation of underlying profit before tax to reported (loss)/profit before tax

	Underlying £m	2020 Specific adjusting items £m	Total £m	Underlying £m	2019 Specific adjusting items £m	Total £m
Revenue	352.0	-	352.0	384.4	-	384.4
Cost of sales	(236.9)	-	(236.9)	(249.5)	-	(249.5)
Gross profit	115.1	-	115.1	134.9	-	134.9
Administrative expenses and other income	(95.1)	-	(95.1)	(95.3)	-	(95.3)
Amortisation of acquired intangibles	-	(6.0)	(6.0)	-	(4.0)	(4.0)
Acquisition-related expenditure	-	(3.0)	(3.0)	-	(1.8)	(1.8)
Reorganisation costs	-	(11.9)	(11.9)	-	(3.4)	(3.4)
GMP equalisation	-	-	-	-	(1.3)	(1.3)
Operating profit/(loss)	20.0	(20.9)	(0.9)	39.6	(10.5)	29.1
Net finance costs	(4.4)	-	(4.4)	(2.6)	-	(2.6)
<b>Profit/(loss) before tax taxation</b>	<b>15.6</b>	<b>(20.9)</b>	<b>(5.3)</b>	<b>37.0</b>	<b>(10.5)</b>	<b>26.5</b>
Tax expense	(4.1)	3.0	(1.1)	(8.2)	1.6	(6.6)
<b>Profit/(loss) for the year</b>	<b>11.5</b>	<b>(17.9)</b>	<b>(6.4)</b>	<b>28.8</b>	<b>(8.9)</b>	<b>19.9</b>

The FY 2019/20 results include the impact of IFRS 16 *Leases*, which was adopted on 1 July 2019. The impact of IFRS 16 on the Group's underlying operating profit was an increase of £0.9m and there was a £0.2m negative impact on the Group's underlying profit before tax for the year ended 30 June 2020. The impact of IFRS 16 on the Group's reported operating profit was an increase of £4.8m and there was a £3.7m increase in the Group's reported profit before tax for the year ended 30 June 2020. Comparative APMs have not been updated to reflect the adoption of IFRS 16. In the year ended 30 June 2019, an IAS 17 charge of £8.5m was incurred.

**Underlying earnings attributable to the owners of the parent:** The Group uses underlying earnings attributable to the owners of the parent as the input to its adjusted EPS measure. This profit measure excludes the amortisation of acquired intangibles, acquisition-related expenditure, reorganisation costs and other specific adjusting items, but is an after-tax measure. The Board considers underlying EPS to be more reflective of the Group's trading performance in the year. A reconciliation between earnings attributable to the owners of the parent and underlying earnings attributable to the owners of the parent is shown in Note 8.

**Organic growth/decline:** Organic growth/decline is calculated as the growth/decline in the result for the current year compared to the prior year, after adjusting for the performance of acquisitions or disposals, to include the results of those acquisitions for an equivalent period in each financial year.

**Constant currency organic growth/decline:** The Group generates revenues and profits in various territories and currencies because of its international footprint. Those results are translated on consolidation at the foreign exchange rates prevailing at the time. Constant currency organic growth/decline is calculated by translating the result for the current year using foreign currency exchange rates applicable to the prior year. This provides an indication of the growth/decline of the business, excluding the impact of foreign exchange.

### 3. Alternative performance measures (continued)

Headline trading performance	Underlying			Reported	
	Revenue	Operating profit	Profit before tax	Operating (loss)/ profit	(Loss)/ profit before tax
<b>FY 2019/20 (£m)</b>	<b>352.0</b>	<b>20.0</b>	<b>15.6</b>	<b>(0.9)</b>	<b>(5.3)</b>
FY 2018/19 (£m)	384.4	39.6	37.0	29.1	26.5
Add performance of acquisitions (£m)	16.1	4.0	3.6	4.0	3.6
Organic FY 2018/19 (£m)	400.5	43.6	40.6	33.1	30.1
<b>Decline (%)</b>	<b>(8)</b>	<b>(49)</b>	<b>(58)</b>	<b>(103)</b>	<b>(120)</b>
<b>Organic decline (%)</b>	<b>(12)</b>	<b>(54)</b>	<b>(62)</b>	<b>(103)</b>	<b>(118)</b>
<b>Constant currency organic decline (%)</b>	<b>(12)</b>	<b>(53)</b>	<b>(61)</b>	<b>(102)</b>	<b>(117)</b>

Transport Engineering (now Ricardo Rail Australia, or 'RRA') was acquired on 31 May 2019. Had RRA been acquired and consolidated from 1 July 2018 such that results for FY 2018/19 included RRA for an equivalent period to FY 2019/20, revenue for FY 2018/19 would have been £14.0m higher. Operating profit for FY 2018/19 would have been £3.2m higher and profit before tax for FY 2018/19 would have been £2.9m higher. PLC Consulting (now Ricardo Energy, Environment and Planning, or 'REEP') was acquired on 31 July 2019. Had REEP been acquired and consolidated from 31 July 2018 such that results for FY 2018/19 included REEP for an equivalent period to with FY 2019/20, revenue for FY 2018/19 would have been £2.1m higher. Operating profit for FY 2018/19 would have been £0.8m higher and profit before tax would have been £0.7m higher.

**Segmental underlying operating profit:** This is presented in our segmental disclosures and reflects the underlying trading of each segment, as assessed by the main Board. This excludes segment-specific amortisation of acquired intangibles, acquisition-related expenditure and other specific adjusting items, such as reorganisation costs. It also excludes unallocated Plc costs, which represent the costs of running the public limited company and specific adjusting items which are outside of the control of segment management. A reconciliation between segment underlying operating profit, the Group's underlying operating profit and operating profit is presented in Note 5.

#### b) Cash flow measures

**Cash conversion:** A key measure of the Group's cash generation is the conversion of profit into cash. This is the reported cash generated from operations (defined as operating cash flow, less movements in net working capital and defined benefit pension deficit contributions) divided by earnings before interest, tax, depreciation and amortisation ('EBITDA'), expressed as a percentage.

**Underlying cash conversion:** This is underlying cash generated from operations (defined as reported cash generated from operations, adjusted for the cash impact of specific adjusting items) divided by underlying EBITDA (defined as reported EBITDA, adjusted for the impact of specific adjusting items). A reconciliation between the two is shown below.

Cash conversion	2020			2019		
	Underlying	Specific adjusting items	Total	Underlying	Specific adjusting items	Total
	£m	£m	£m	£m	£m	£m
Operating profit/(loss)	20.0	(20.9)	(0.9)	39.6	(10.5)	29.1
Depreciation and amortisation	17.6	6.7	24.3	11.4	-	11.4
Amortisation of acquired intangibles	-	6.0	6.0	-	4.0	4.0
EBITDA	37.6	(8.2)	29.4	51.0	(6.5)	44.5
Movement in working capital	4.5	4.0	8.5	(7.8)	0.5	(7.3)
Pension deficit payments	(4.6)	-	(4.6)	(4.3)	-	(4.3)
Loss/(profit) on disposal of assets	-	(1.0)	(1.0)	(0.7)	0.7	-
Share based payments	0.6	-	0.6	1.0	-	1.0
Fair value losses/(gains) on derivative financial instruments	0.3	-	0.3	(0.8)	-	(0.8)
Cash generated from/(used in) operations	38.4	(5.2)	33.2	38.4	(5.3)	33.1
<b>Cash conversion</b>	<b>102.1%</b>		<b>112.9%</b>	<b>75.3%</b>		<b>74.4%</b>

**Net debt:** is defined as current and non-current borrowings less cash and cash equivalents, including hire purchase agreements, but excluding any impact of IFRS 16 lease liabilities. The transitional impact of the adoption of IFRS 16 Leases is set out in Note 2. Management believes this definition is the most appropriate for monitoring the indebtedness of the Group and is consistent with the treatment in the Group's banking agreements.

#### c) Tax measures

**Underlying effective tax rate ('ETR')**: We report one adjusted tax measure, which is the tax rate on underlying profit before tax. This is the tax charge applicable to underlying profit before tax expressed as a percentage of underlying profit before tax.

# Financial performance

The Group delivered revenue of £352.0m and underlying profit before tax of £15.6m (reported loss before tax £5.3m) in the year, a reduction of 8% and 58% (reported 120%) on the prior year, respectively.

The following disclosures provide further information about the drivers of the Group's financial performance in the year. This includes analysis of the respective contribution of the Group's reportable segments along with information about its operating cost base, net finance costs and tax. In addition, disclosure on earnings per share and the dividend is provided.

## 4. Operating profit

Research and development expenditure accounting policy – Note 1(d)

Government grants accounting policy – Note 1(e)

	Note	2020 £m	2019 £m
<b>Revenue</b>	6	<b>352.0</b>	384.4
<b>Operating (costs)/income</b>			
Employee costs	32	(188.5)	(179.9)
Depreciation of property, plant and equipment	17	(5.7)	(5.6)
Impairment of property, plant and equipment	17	(5.6)	-
Depreciation of right-of-use assets	18	(5.4)	-
Impairment of right-of-use assets	18	(0.5)	-
Amortisation of other intangible assets	16	(12.0)	(9.8)
Impairment on held for sale assets	19	(1.1)	-
Cost of inventories recognised as expense	22	(51.5)	(70.9)
Operating lease rentals payable		(1.4)	(8.5)
Repairs and maintenance on property, plant and equipment		(12.9)	(12.2)
Net (impairment)/reversals on trade receivables		(1.3)	0.6
Rental income		1.1	0.9
Profit on disposal of property, plant and equipment		(1.0)	0.7
Research and Development Expenditure Credits ('RDEC')		7.7	7.1
Research and development		(3.5)	(3.6)
Other cost of sales		(37.9)	(41.2)
Other operating charges		(33.4)	(32.9)
<b>Operating (loss)/profit</b>		<b>(0.9)</b>	29.1
Specific adjusting items	7	20.9	10.5
<b>Underlying operating profit</b>		<b>20.0</b>	39.6

## 5. Financial performance by segment

The segmental analysis helps explain the business in the way that it is monitored by management.

**The Group's operating segments are being reported based on the financial information provided to the Chief Operating Decision Maker who is the Chief Executive Officer. The information reported includes financial performance but does not include the financial position of assets and liabilities. The operating segments were identified by evaluating the Group's products and services, processes, types of customers and delivery methods.**

From 1 July 2019, the Group has reported the following reportable operating segments: Energy & Environment ('EE'), Rail, Automotive and Industrial ('A&I'), Defense, and Performance Products. There is also an 'all other segments' segment, which comprises the results of Ricardo Strategic Consulting and Software, combined due to their size. Neither of these met the quantitative thresholds for reportable segments in FY 2019/20 or FY 2018/19. This change was driven by successful acquisitions in Rail and EE, increasing the prominence of these businesses within the Group, combined with the wish to provide more granularity into the key drivers of performance within the Group.

The following summarises the operations in each of the Group's reportable segments:

- Energy & Environment ('EE') – EE generates revenue from the provision of environmental consultancy services to customers across the world. Customers include governments, public agencies and private businesses;
- Rail – Rail generates revenue from through two separate operations: a consultancy unit that provides technical advice and engineering services; and a separate, independent entity, Ricardo Certification, that performs accredited assurance services;



## 5. Financial performance by segment (continued)

- Automotive & Industrial ('A&I') – A&I generates revenue through the provision of engineering, design, development and testing services, focused on hybrid and electric systems, electrification, engines, driveline and transmissions, testing, and vehicle engineering. Customers include including businesses in the automotive, aerospace, defence, energy, off-highway and commercial, marine, motorcycle and light-personal transport, and rail markets;
- Defense – Defense provides engineering services, software and products to customers in the US defence market, aimed and protecting life and improving the operation, maintenance and support of complex systems; and
- Performance Products ('PP') – PP manufactures and assembles niche high-quality components, prototypes and complex products, including engines, transmissions and other precision and performance-critical products. Its customers manufacture low-volume, high-performance products in markets such as motorsport, automotive, aerospace, defence and rail.

The operations of the Group have been categorised into these segments due to the nature of their services, market sectors, client bases and distribution channels and operating across markets requiring adherence to regulatory frameworks that are similar in nature.

### Measurement of performance

Management monitors the financial results of its operating segments separately for the purpose of making decisions about allocating resources and assessing performance. Segmental performance is measured based on underlying operating profit, as this measure provides management with an overall view of how the different operating segments are managing their total cost base against the revenue generated from their portfolio of contracts.

There are varying levels of integration between the segments. The segments use EE for their specialist environmental knowledge. A&I and PP have various shared projects. There are also shared service costs between the segments. Inter-segment transactions are eliminated on consolidation. Inter-segment pricing is determined on an arm's length basis in a manner similar to transactions with third parties.

Included within Plc costs in the following tables are costs arising from a central Group function, including the costs of running the public limited company, which are not recharged to the other operating segments. Comparative figures for the year ended 30 June 2019 have been restated, reflecting the impact of the changes the Group made to its operating segments during the year ended 30 June 2020. The operating segment section of this Annual Report provides further detail on the segments' performance (see page 47 to 59).

For the year ended 30 June 2020	EE	Rail	A&I	Defense	PP	All other segments	Plc	Total
	£m	£m	£m	£m	£m	£m	£m	£m
Total segment revenue	51.7	75.4	108.8	32.8	70.7	19.1	-	358.5
Inter-segment revenue	(0.9)	(0.1)	(2.9)	-	(1.7)	(0.9)	-	(6.5)
<b>Revenue from external customers</b>	<b>50.8</b>	<b>75.3</b>	<b>105.9</b>	<b>32.8</b>	<b>69.0</b>	<b>18.2</b>	-	<b>352.0</b>
Segment underlying operating profit	6.3	5.8	0.5	5.1	5.0	0.1	-	22.8
Plc costs	-	-	-	-	-	-	(2.8)	(2.8)
<b>Underlying operating profit</b>	<b>6.3</b>	<b>5.8</b>	<b>0.5</b>	<b>5.1</b>	<b>5.0</b>	<b>0.1</b>	<b>(2.8)</b>	<b>20.0</b>
Specific adjusting items(*)	(1.7)	(5.5)	(10.1)	(0.5)	(0.1)	(0.5)	(2.5)	(20.9)
<b>Operating profit/(loss)</b>	<b>4.6</b>	<b>0.3</b>	<b>(9.6)</b>	<b>4.6</b>	<b>4.9</b>	<b>(0.4)</b>	<b>(5.3)</b>	<b>(0.9)</b>
Net finance costs								(4.4)
<b>Loss before taxation</b>								<b>(5.3)</b>
Depreciation and amortisation	3.7	6.5	14.0	1.4	1.0	2.4	1.3	30.3
Capital expenditure:								
- Other intangible assets	0.9	0.1	3.5	0.5	0.1	3.4	0.7	9.2
- Property, plant and equipment	0.3	0.2	19.8	0.3	0.9	0.1	0.4	22.0
- Right-of-use assets	-	0.1	4.5	0.4	0.1	-	-	5.1

For the year ended 30 June 2019	EE	Rail	A&I	Defense	PP	All other segments	Plc	Total
	£m	£m	£m	£m	£m	£m	£m	£m
Total segment revenue	45.1	67.5	131.7	25.5	99.3	23.7	-	392.8
Inter-segment revenue	(0.5)	(0.1)	(2.4)	(0.3)	(3.9)	(1.2)	-	(8.4)
<b>Revenue from external customers</b>	<b>44.6</b>	<b>67.4</b>	<b>129.3</b>	<b>25.2</b>	<b>95.4</b>	<b>22.5</b>	-	<b>384.4</b>
Segment underlying operating profit	5.0	5.2	16.1	3.2	9.9	3.9	-	43.3
Plc costs	-	-	-	-	-	-	(3.7)	(3.7)
<b>Underlying operating profit</b>	<b>5.0</b>	<b>5.2</b>	<b>16.1</b>	<b>3.2</b>	<b>9.9</b>	<b>3.9</b>	<b>(3.7)</b>	<b>39.6</b>
Specific adjusting items(*)	(1.1)	(2.9)	(2.9)	(0.5)	-	-	(3.1)	(10.5)
<b>Operating profit</b>	<b>3.9</b>	<b>2.3</b>	<b>13.2</b>	<b>2.7</b>	<b>9.9</b>	<b>3.9</b>	<b>(6.8)</b>	<b>29.1</b>
Net finance costs								(2.6)
<b>Profit before taxation</b>								<b>26.5</b>
Depreciation and amortisation	2.0	3.3	5.3	0.8	0.8	1.8	1.4	15.4
Capital expenditure:								
- Other intangible assets	1.3	0.2	3.3	0.8	0.1	3.0	0.3	9.0
- Property, plant and equipment	0.2	0.5	5.0	0.4	1.2	0.1	0.2	7.6

\* See Note 7

Revenue from one customer represented approximately 13% (2019: 19%) of the Group's external revenue, which is primarily reported in the PP segment.

## 6. Revenue

This note explains how the Group derives its revenue.

Revenue accounting policy – Note 1(f)

Key sources of estimation uncertainty: Revenue on fixed price contracts – Note 1(c)

Disaggregation of revenue for the year ended 30 June:	2020	2019
	£m	£m
<b>a) Revenue stream</b>		
Services provided under:		
- fixed price contracts	189.5	210.5
- time and materials contracts	73.3	53.9
- subscription and software support contracts	6.7	6.5
Goods supplied:		
- manufactured or assembled products	74.3	105.5
- software products	7.2	8.0
Intellectual property	1.0	-
<b>Total</b>	<b>352.0</b>	<b>384.4</b>
<b>b) Customer location</b>		
United Kingdom	124.6	152.4
Europe	80.4	96.4
North America	59.9	61.3
China	22.6	30.9
Rest of Asia	31.4	30.8
Australia	21.4	2.9
Rest of the World	11.7	9.7
<b>Total</b>	<b>352.0</b>	<b>384.4</b>
<b>(c) Timing of recognition</b>		
Over time	276.4	277.7
At a point in time	75.6	106.7
<b>Total</b>	<b>352.0</b>	<b>384.4</b>

See Note 23 for further information on the Group's revenue including disclosure of impairment losses recognised on receivables and contract assets arising from the Group's contracts with customers. Note 23 also provides an opening and closing balances of receivables and contract assets, together with the Group's order book which comprises the value of all unworked purchase orders and contracts received from customers at the reporting date and provides an indication of revenue that has been secured and will be recognised in future accounting periods.

See Note 24 for the opening and closing balances of contract liabilities from contracts with customers.

## 7. Specific adjusting items

Specific adjusting items are disclosed separately in the financial statements where it is necessary to do so to provide further understanding of the financial performance of the Group. These items comprise the amortisation of acquired intangible assets, acquisition-related expenditure, reorganisation costs and other non-recurring items that are included due to the significance of their nature or amount. Acquisition-related expenditure is incurred by the Group to effect a business combination, including the costs associated with the integration of acquired businesses. Reorganisation costs relate to non-recurring expenditure incurred as part of fundamental restructuring activities, significant impairments of property, plant and equipment, and other items deemed to be one-off in nature.

### Specific adjusting items accounting policy - Note 1(g)

#### Critical judgement on specific adjusting items: Reorganisation costs – Note 1(c)

	2020	2019
	£m	£m
Amortisation of acquired intangible assets	6.0	4.0
Acquisition-related expenditure	3.0	1.8
Reorganisation costs		
- Purchases and disposals	5.7	-
- Other reorganisation costs	6.2	3.4
Guaranteed Minimum Pensions ('GMP') equalisation	-	1.3
<b>Total before tax</b>	<b>20.9</b>	<b>10.5</b>
Tax credit on specific adjusting items	(3.3)	(1.6)
Tax charge on prior year specific adjusting item	0.3	-
<b>Total after tax</b>	<b>17.9</b>	<b>8.9</b>

### Amortisation of acquired intangible assets

On acquisition of a business, the purchase price is allocated to assets such as customer contracts and relationships. Amortisation occurs on a straight-line basis over its useful economic life, which is between 3 and 9 years. The increase in the year is due to the acquisition of Transport Engineering Pty Ltd on 31 May 2019 (see Note 14(b)) and PLC Consulting Pty Ltd on 31 July 2019 (see Note 14(a)). For further information please see the intangible assets Note 16.

### Acquisition-related expenditure

The current year charge comprises £2.8m of earn out and employee retention costs, accrued in relation to the two acquisitions detailed in Note 14). In addition, £0.4m of costs were incurred in relation to the post-deal integration of these businesses. £0.8m of costs were incurred on acquisition processes in the year (including the acquisition of PLC Consulting Pty Ltd and other aborted processes), comprising external professional fees and the costs of running an internal acquisitions department to effect acquisition processes.

Partially offsetting these, £1.1m of income was recognised in relation to a gain on the settlement of a foreign exchange option contract, which was taken out to hedge an aborted overseas acquisition. This has been classified as a specific adjusting item due to the non-recurring nature and significance of the amount. The prior year charge included £0.4m of earn-out costs and £1.4m of acquisition-related fees and costs.

### Reorganisation costs

#### Purchases and disposals

Major restructuring actions were taken in the year to address performance issues in the A&I US business and realign the cost base to make it more operationally efficient. The charge in the current year comprises £6.7m (£5.6m in Note 17 and £1.1m in Note 19) of impairments and £3.1m of income from the release of a lease liability following the acquisition of the freehold property of the Detroit Technology Campus ('DTC') on 21 August 2019, in order to remove the business from a long term lease commitment on the property. In addition, the current year charge includes a loss on disposal of £2.1m in relation to the sale of Ricardo's Detroit test cell assets on 3 June 2020. These items have been included as specific adjusting items as they are significant in quantum and would distort the underlying

trading performance if included. See Note 17 for further details on the disposal of the test cell assets.

#### Other reorganisation costs

In addition to the actions taken above, as part of the A&I US major restructuring actions in FY 2019/20, Ricardo exited the aftertreatment business at our Santa Clara Technical Centre ('SCTC'), incurring £0.4m of exit costs and the write off of equipment. £0.3m of redundancy costs and £0.2m of incremental contractor costs were incurred in the year in connection with the management of these restructuring actions. These contractors are incremental to the business and non-revenue generating.

£2.6m of redundancy costs were incurred in FY 2019/20 across the Group's automotive-related businesses (A&I in Europe, Performance Products, RSC & Software). These actions were taken as a result of major restructuring required to right-size the cost base in these businesses in response to the unforeseen challenging trading conditions and customer plant shut-downs in the second half of the financial year. As part of these restructuring actions, a charge of £0.6m was recognised in respect of the vacant portion of the Cambridge Technical Centre ('CaTC') due to a reduction in headcount at this site as a result of restructuring actions taken. £0.5m of professional fees and £0.1m of contractor costs were incurred. These fees and contractor costs were incremental to the business and directly related to the restructuring actions taken, being a combination of professional advice taken and management of the restructuring process.

In the prior year, £2.4m of redundancy costs, together with £0.7m of costs in relation to onerous contracts and £0.3m of incremental contractor costs, were incurred in A&I Europe in relation to the completion of a programme to re-set the global automotive business in response to a fundamental shift in market dynamics. The FY 2019/20 actions were not linked to those taken in FY 2018/19.

£1.4m of redundancy costs were incurred in Rail in FY 2019/20. The Rail costs represent the completion of a restructuring process which commenced in the prior year to realign the business to market demand. £0.5m of redundancy costs were incurred in the prior year in relation to this process, which straddled the prior year end.

The total costs of these restructuring actions have been included as specific adjusting items since, together, they are significant in quantum and would distort the underlying trading performance if included.



## 7. Specific adjusting items (continued)

### Guaranteed Minimum Pensions ('GMP') equalisation

In October 2018, the High Court issued a judgement confirming that pension schemes are required to equalise male and female members' benefits for the effect of Guaranteed Minimum Pensions ('GMP'). The past service cost due to GMP equalisation is considered to be non-recurring in nature and significant in its amount.

### Tax charge on prior year specific adjusting items

During FY 2019/20, a tax charge was recognised in relation to adjustments to the prior year tax charge arising on the sale of the Germany test business in June 2018.

## 8. Earnings per share

Basic earnings per share is calculated by dividing the earnings attributable to ordinary shareholders by the weighted average number of shares outstanding during the year, excluding those held by an employee benefit trust for the Long-Term Incentive Plan ('LTIP') and by the Share Incentive Plan ('SIP') for the free share scheme which are treated as cancelled for the purposes of the calculation.

For diluted earnings per share, the weighted average number of ordinary shares in issue is adjusted to assume conversion of all dilutive potential ordinary shares. These include potential awards of LTIP shares and options granted to employees. The assumed proceeds from these is regarded as having been received at the average market price of ordinary shares during the year.

Reconciliations of the earnings and the weighted average number of shares used in the calculations are set out below. Underlying earnings per share is also shown because the Directors consider that this provides a more useful indication of underlying performance and trends over time

For the year ended 30 June	2020	2019
	£m	£m
<b>(Loss)/ earnings attributable to owners of the parent</b>	<b>(6.5)</b>	19.8
Add back the net-of-tax impact of:		
- Amortisation of acquired intangible assets	4.5	3.4
- Acquisition-related expenditure	2.9	1.2
- Asset purchases and disposals	4.8	-
- Other reorganisation costs	5.4	3.0
- Guaranteed Minimum Pensions ('GMP') equalisation	-	1.3
- Tax charge on prior year specific adjusting item	0.3	-
<b>Underlying earnings attributable to owners of the parent</b>	<b>11.4</b>	28.7

For the year ended 30 June	2020	2019
	Number of shares millions	Number of shares millions
<b>Basic weighted average number of shares in issue</b>	<b>53.4</b>	53.4
Effect of dilutive potential shares	-	0.2
<b>Diluted weighted average number of shares in issue</b>	<b>53.4</b>	53.6

	2020	2019
	pence	pence
<b>(Loss)/earnings per share</b>		
Basic	(12.2)	37.1
Diluted	(12.2)	36.9

	2020	2019
	pence	pence
<b>Underlying earnings per share</b>		
Basic	21.3	53.7
Diluted	21.3	53.5

Underlying earnings per share is also shown because the Directors consider that this provides a more useful indication of underlying performance and trends over time.

## 9. Dividends

Dividends are one type of shareholder return, historically paid to our shareholders in April and November.

### Dividend accounting policy – see Note 1(h)

	2020	2019
	£m	£m
Final dividend for the year ended 30 June 2019 of 15.28p (2018: 14.71p) per share	8.2	7.8
Interim dividend for the year ended 30 June 2020 of 6.24p (2019: 6.00p) per share	3.3	3.2
<b>Equity dividends paid</b>	<b>11.5</b>	<b>11.0</b>

A dividend of £0.1m was issued during the year by a subsidiary of the Group to a non-controlling party of that subsidiary.

## 10. Net finance costs

### Net finance costs accounting policy – see Note 1(i)

	2020	2019
	£m	£m
Finance income:		
Bank interest receivable	0.3	0.5
Interest income on finance lease receivables (Note 18)	0.1	-
Total finance income	0.4	0.5
Finance costs:		
Bank interest payable on borrowings	(3.5)	(3.0)
Interest expense on lease liabilities (Note 18)	(1.2)	-
Defined benefit pension financing costs (Note 33)	(0.1)	(0.1)
Total finance costs	(4.8)	(3.1)
<b>Net finance costs</b>	<b>(4.4)</b>	<b>(2.6)</b>

## 11. Auditor's remuneration

This note includes all amounts paid to the Group's auditors, KPMG, whether in relation to their audit of the Group or otherwise. During the year the Group (including its subsidiaries) obtained the following services from the Group auditors and its associates:

	2020	2019
	£m	£m
Fees payable for services provided by the Company's auditors and its associates		
Statutory audit of the Company and its consolidated financial statements <sup>(1)</sup>	0.3	0.2
Statutory audit of the Company's subsidiaries and their financial statements <sup>(2)</sup>	0.4	0.3
<b>Total audit fees</b>	<b>0.7</b>	<b>0.5</b>
Audit-related assurance services <sup>(3)</sup>	0.1	0.1
<b>Total non-audit fees</b>	<b>0.1</b>	<b>0.1</b>

(1) Fees payable during the year to the Company's auditors and its associates for the statutory audit of the Company and its consolidated financial statements were £353,000 (2019: £195,000).

(2) Fees payable during the year to the Company's auditors and its associates for the statutory audit of the Company's subsidiaries and their financial statements were £372,900 (2019: £351,000).

(3) Fees payable during the year to the Company's auditors and its associates for audit-related assurance services were £42,000 (2019: £50,000) and comprised £42,000 (2019: £42,000) pursuant to the interim review and £nil (2019: £8,000) for independent reviews, agreed-upon procedures and other services closely related to the audit of the Company and its subsidiaries.

Total non-audit fees payable to the external auditors for audit-related assurance services and other non-audit services for the financial year were 7% (2019: 9%) of total audit fees. These non-audit services comprised the Group's interim review and other audit-related assurance services.

## 12. Tax expense

This note explains how our Group current tax charge arises.

### Tax expense accounting policy – Note 1(j)

	2020	2019
	£m	£m
Current income tax:		
- UK corporation tax	0.4	1.6
- Adjustments in respect of prior years	(0.3)	(0.8)
- Total UK tax	0.1	0.8
- Foreign corporation tax	2.8	1.7
- Adjustments in respect of prior years	0.6	0.1
- Total foreign tax	3.4	1.8
Total current tax	3.5	2.6
Deferred tax:		
- Charge for the year	(2.3)	3.0
- Adjustments in respect of prior years	(0.1)	1.0
Total deferred tax	(2.4)	4.0
<b>Total taxation</b>	<b>1.1</b>	<b>6.6</b>
Tax on items recognised in other comprehensive income	(1.1)	1.4

Tax on items recognised in other comprehensive income relate to the tax impact of remeasurements of the defined benefit pension scheme and changes in tax rate. Tax on items recognised directly in equity relate to equity-settled share-based payment transactions.

The main rate of UK corporation tax for the year ending 30 June 2020 is 19%. The Finance Act 2020 reversed the decision to reduce the main rate from 19% to 17% from 1 April 2020. Deferred taxes at the reporting date have been measured and reflected in these financial statements by using the enacted rate within each jurisdiction. The tax charge for the year is higher (2019: higher) than the standard rate of corporation tax in the UK. The differences are set out below:

	2020	2019
	£m	£m
Profit for the year before tax	(5.3)	26.5
Multiplied by the standard rate of corporation tax in the UK of 19% (2019: 19%)	(1.0)	5.0
Effects of:		
Losses not recognised	-	0.1
Expenses not deductible for tax purposes	1.2	0.5
Government tax incentives <sup>(1)</sup>	(0.3)	(0.2)
Other overseas taxes <sup>(2)</sup>	0.5	0.5
Adjustments in respect of prior years	0.3	0.3
Changes in corporation tax rates	0.4	0.4
<b>Total taxation</b>	<b>1.1</b>	<b>6.6</b>

(1) Primarily relates to R&D tax credits.

(2) Primarily relates to withholding taxes.

The Group operates in a number of countries, and is subject to taxation in numerous jurisdictions. Legislation related to taxation is complex and Management is required to make judgements based on appropriate professional advice, and amounts provided are accrued based on Management's interpretation of country-specific tax laws. In particular, Management applies judgement in respect of ongoing tax audits around the Group, which can take a significant amount of time to be agreed with Tax Authorities. The Group estimates and accrues taxes that will ultimately be payable when reviews or audits by Tax Authorities of tax returns are completed. These estimates include judgements about the position expected to be taken by each Tax Authority. Management judgement has also been required to ensure that appropriate transfer pricing is applied on all intra-group transactions, and in determining the amounts that would be undertaken on an arm's length basis. As a result, actual liabilities could differ from the amounts provided which could have a consequent impact on the results and net position of the Group.

None of the amounts are individually material and therefore there is not a significant risk of material differences in future periods.



## Capital base

The Group has taken positive steps to restructure in order to create a more agile and asset-light business. This includes the sale of the test facilities in Detroit in June 2020. Non-current assets increased this year on adoption of IFRS 16 with the Group's leases being added to the statement of financial position from the 1 July 2019.

### 13. Non-current assets by geographical location (excluding deferred tax assets)

Asset location	Note	2020 £m	2019 £m
United Kingdom		115.0	97.2
Netherlands		20.1	20.3
North America		20.1	15.8
Australia		29.6	27.7
Rest of the World		14.5	8.8
<b>Total</b>		<b>199.3</b>	<b>169.8</b>
Goodwill	15	87.8	84.2
Other intangible assets	16	39.9	41.0
Property, plant and equipment	17	45.4	44.6
Right-of-use assets	18	23.9	-
Lease receivable	18	2.3	-
<b>Total</b>		<b>199.3</b>	<b>169.8</b>

### 14. Acquisitions

#### Key sources of estimate uncertainty: acquisition accounting - see Note 1(c)

#### (a) Acquisitions in the current period - PLC Consulting

On 31 July 2019, the Group acquired the entire issued share capital of PLC Consulting Pty Ltd ('PLC Consulting') for initial cash consideration of £4.2m (AUD 7.4m), which includes an adjustment for cash and normalised net working capital of £0.3m (AUD 0.4m), paid in November 2019.

PLC Consulting is an Australian firm with a strong technical advisory capability across the project life cycle in infrastructure, environment and planning, including supporting the environmental requirements of master-planning, business cases, procurement, design, construction and operation. PLC Consulting was renamed Ricardo Energy Environment and Planning ('REEP') on 5 August 2019. The following tables set out the fair value of cash consideration payable to acquire PLC Consulting, together with the fair value of net assets acquired.

Fair value of cash consideration	Note	£m
Initial cash consideration		4.2
<b>Total fair value of cash consideration</b>		<b>4.2</b>
Fair value of identifiable net assets acquired		£m
Customer contracts and relationships	16	1.3
Trade, contract and other receivables		0.5
Cash and cash equivalents		0.4
Trade, contract and other payables		(0.2)
Deferred tax liabilities	21	(0.4)
<b>Fair value of identifiable net assets acquired</b>		<b>1.6</b>
Goodwill	15	2.6
<b>Total fair value of cash consideration</b>		<b>4.2</b>

The maximum contingent cash payable is £1.4m (AUD 2.5m). The amounts payable will be based on the achievement of a range of annual performance targets measured against the earnings before interest, tax, depreciation and amortisation of PLC Consulting across a two-year earn-out period. These payments are dependent upon the continuing employment of the sellers in the business and are not considered to be consideration. £0.7m (AUD 1.3m), representing an accrual for the fair value of the expected year one payment, has been accrued within specific adjusting items (see Note 7).

Adjustments have been made for the recognition of customer-related intangible assets separable from goodwill amounting to £1.3m (AUD 2.4m). The fair value of the contingent cash consideration and identifiable net assets acquired were identified in accordance with the requirements of IFRS 3 *Business Combinations* and the sale and purchase agreement.

The goodwill arising on acquisition can be ascribed to the existence of a skilled, active workforce, developed expertise and processes and the opportunities to obtain new contracts and develop the business. None of these meet the criteria for recognition as intangible assets separable from goodwill. None of the goodwill recognised on consolidation is expected to be deductible for tax purposes.

## 14. Acquisitions (continued)

### (a) Acquisitions in the current period - PLC Consulting (continued)

The net assets acquired of £1.6m (AUD 3.0m) includes trade receivables of £0.5m (AUD 0.9m), all of which have been collected.

Acquisition-related expenditure of £0.2m representing costs incurred to integrate the business post-acquisition, together with £0.4m of amortisation on acquired intangibles, has been charged to the income statement for the year ended 30 June 2020 and is included as a specific adjusting item in Note 7.

The revenue included in the income statement in relation to the acquired business was £3.0m. The underlying operating profit over the same period was £0.9m. This is reported in the EE segment in Note 5.

Had PLC Consulting been acquired and consolidated from 1 August 2018, revenue and operating profit in the prior period income statement would have been £2.1m and £0.8m higher, respectively.

### (b) Acquisitions in the prior year - Transport Engineering

On 31 May 2019, the Group acquired the entire issued share capital of Transport Engineering Pty Ltd ('Transport Engineering') for initial cash consideration payable of £21.7m (AUD 39.5m) which includes an adjustment for cash and normalised net working capital of £0.5m (AUD 0.9m) paid in August 2019, together with the accrued fair value of contingent cash consideration payable of £5.1m (AUD 9.4m). Transport Engineering is a leading rail technical services consultancy based in Australia. It expands the Group's existing capabilities within the growing Asia-Pacific rail market and provides a footprint for other Ricardo businesses in Australia. Transport Engineering was renamed Ricardo Rail Australia ('RRA') on 11 June 2019. The following tables set out the fair value of cash consideration payable to acquire Transport Engineering, together with the assessment of the fair value of net assets acquired.

Fair value of cash consideration	Note	£m
Initial cash consideration		21.7
Fair value of contingent cash consideration		5.1
<b>Total fair value of cash consideration</b>		<b>26.8</b>
Fair value of identifiable net assets acquired		
Customer contracts and relationships	16	9.7
Property, plant and equipment	17	0.1
Trade, contract and other receivables		2.3
Cash and cash equivalents		2.3
Trade, contract and other payables		(1.7)
Current tax liabilities		(0.9)
Deferred tax liabilities	21	(2.9)
<b>Fair value of identifiable net assets acquired</b>		<b>8.9</b>
Goodwill	15	17.9
<b>Total fair value of cash consideration</b>		<b>26.8</b>

The Group also acquired all of Transport Engineering's shareholding in its associate, Wamarragu Transport Services Pty Ltd, the financial results of which are immaterial to the Group. The cash impact of the acquisition in the prior year was £18.9m (AUD 34.4m), being the initial cash consideration of £21.2m (AUD 38.6m) paid on completion, less cash acquired of £2.3m (AUD 4.2m). £0.5m (AUD 0.9m) was paid for cash and normalised net working capital in the current year. The maximum contingent cash consideration payable is £8.1m (AUD 15.0m). The fair value of the contingent cash consideration is considered to be Level 3 of the fair value hierarchy within IFRS 13 *Fair Value Measurement*. The fair value is valued based on a financial forecast using the Group's own data, with a probability applied for the likely outcome. Significant unobservable inputs are order intake, pipeline of opportunities and historical performance. The stronger these inputs, the higher the estimated fair value. The amounts payable will be based on the achievement of annual performance targets measured against the profit before tax of Transport Engineering across a two-year earn-out period. Each earn-out is only payable in full if the performance target is achieved. £2.1m (AUD 3.8m) (2019: £0.2m – AUD 0.4m) has been accrued within specific adjusting items (see Note 7) in the current year, reflecting the increase in the fair value of contingent consideration payable based on RRA's results for the year ended 30 June 2020, together with the associated unwind in the discount rate. This is included within non-current liabilities as the amount is not due to be paid until after 30 June 2021.

Adjustments have been made to identifiable net assets acquired to reflect their fair value. These include the recognition of customer-related intangible assets separable from goodwill amounting to £9.7m (AUD 17.8m). The fair value of the contingent cash consideration and identifiable net assets acquired were identified in accordance with the requirements of IFRS 3 *Business Combinations* and the sale and purchase agreement.

The goodwill arising on acquisition can be ascribed to the existence of a skilled, active workforce, developed expertise and processes and the opportunities to obtain new contracts and develop the business. None of these meet the criteria for recognition as intangible assets separable from goodwill. None of the goodwill recognised on consolidation is expected to be deductible for tax purposes.

The fair value of trade, contract and other receivables acquired of £2.3m (AUD 4.2m) included trade receivables of £0.3m (AUD 0.6m) and amounts recoverable on contracts of £1.8m (AUD 3.2m), all of which have been collected. Had Transport Engineering been acquired and consolidated from 1 July 2018, revenue and underlying operating profit in the income statement in the prior period would be £14.0m and £3.1m higher, respectively.

Acquisition-related expenditure of £0.2m (2019: £0.5m) representing costs incurred to integrate the business post-acquisition, together with £1.9m (2019: £0.2m) of amortisation on acquired intangibles, has been charged to the income statement for the year ended 30 June 2020 and is included as a specific adjusting item in Note 7. This is reported in the Rail segment in Note 5.

## 15. Goodwill

Goodwill, which arises when we acquire a business and pay a higher amount than the fair value of its net assets primarily due to the synergies we expect to create, is not amortised but is subject to annual impairment reviews.

### Goodwill accounting policy – Note 1(k)

### Critical judgement on carrying value of Goodwill: CGUs – Note 1(c)

### Key sources of estimation uncertainty on carrying value of Goodwill – Note 1(c)

	2020	2019
	£m	£m
Movement in goodwill		
At 1 July	84.2	65.5
Acquisition of business (Note 14)	2.6	17.9
Exchange adjustments	1.0	0.8
<b>At 30 June</b>	<b>87.8</b>	<b>84.2</b>

The carrying value of goodwill and key assumptions used in determining the recoverable amount of each CGU, or group of CGUs, are as follows:

	Carrying value		Pre-tax discount rate		Long-term growth rate	
	2020	2019	2020	2019	2020	2019
Goodwill by operating segment	£m	£m	%	%	%	%
Energy & Environment ('EE') <sup>(1)</sup>	15.9	13.3	13.1	7.1	1.7	3.5
Rail <sup>(2)</sup>	46.6	46.0	12.8	8.0	3.8	4.8
Automotive & Industrial ('A&I')	20.6	20.3	11.9	8.1	3.1	3.2
Defense	3.6	3.5	13.1	8.4	3.9	3.5
Performance Products ('PP')	1.1	1.1	11.9	7.1	1.5	3.5
<b>At 30 June</b>	<b>87.8</b>	<b>84.2</b>				

(1) As set out in further detail in Note 14(a), the Group acquired PLC Consulting Pty Ltd on 31 July 2019, adding goodwill of £2.6m to the EE CGU. PLC Consulting is an Australian firm with a strong technical advisory capability across the project life cycle in infrastructure, environment and planning, including supporting the environmental requirements of master-planning, business cases, procurement, design, construction and operation.

(2) As set out in further detail in Note 14(b), the Group acquired Transport Engineering Pty Ltd ('Transport Engineering') on 31 May 2019, adding goodwill of £17.9m to the Rail group of CGUs. This acquisition provides an active presence for Ricardo Rail in Australia, a strategically important, sizeable and growing market. Transport Engineering was renamed Ricardo Rail Australia on 11 June 2019 and forms a core part of the Group's Rail business, adding breadth and depth to Ricardo Rail's existing capabilities.

The three-year plan and discounted cash flow calculations thereon provide a value-in-use which supports the carrying value of the goodwill allocated to each CGU, or group of CGUs, at 30 June 2020, resulting in no impairment for the year (2019: £Nil). The three-year cashflow forecasts are based on the budget for the following year (year one) and the business plans for years two and three (the three-year plan), with a 75% operating cashflow conversion rate. The three-year plan is prepared by management, and is reviewed and approved by the Board. The three-year plan reflects past experience, management's assessment of the current contract portfolio, contract wins, contract retention, price increases, gross margin, as well as future expected market trends (including the impact of COVID-19).

Cash flows beyond year three are projected into perpetuity using a long-term growth rate, which is determined as being the lower of the planned compound annual growth rate in each CGU, or group of CGU's three-year plan and external third party forecasts of the prevailing inflation and economic growth rates for each of the territories in which each CGU, or group of CGUs, primarily operates.

Apart from operating cash flows and long-term growth rates, the other key assumption is the pre-tax discount rate, which is derived from externally sourced data and reflects the current market assessment of the Group's time value of money and risks specific to each CGU. Specific estimates for long-term growth rates and pre-tax discount rates are shown in Note 15. The value-in-use calculations were assessed for sensitivity to reasonably possible changes to these estimates. The sensitivities assessed include a 10% reduction in planned operating profit, a 10% reduction in the planned operating cash flow conversion rate, a 1% increase in the pre-tax discount rate and a 1% decrease in the long-term growth rate, together with a further scenario whereby all sensitivities were combined together.

For goodwill allocated to the Rail group of CGUs:

- If operating profit levels used in the value-in-use calculation had been 10% lower than management's estimates, the Group would have recognised an impairment charge of £2.8m
- If the operating cash flow conversion rate used in the value-in-use calculation had been 10% lower than management's estimates, the Group would have recognised an impairment charge of £9.6m
- If the long-term rate applied to the cash flows in the value-in-use calculation had been 1% lower than management's estimates, the Group would have recognised an impairment charge of £5.2m
- If the pre-tax discount rate applied to the discounted cash flows in the value-in-use calculation had been 1% higher than management's estimates, the Group would have recognised an impairment charge of £4.3m

For the remaining goodwill balances, the change in the estimated recoverable amount from any reasonably possible change in the key estimates does not cause the recoverable amount to be materially lower than their carrying amount.



## 16. Other intangible assets

Other intangible assets accounting policy – Note 1(l)

Critical judgement: Recoverability of capitalised development costs – Note 1(c)

	Acquired intangible assets				Total £m
	Customer contracts and relationships	Software and technology	Software	Development costs	
	£m	£m	£m	£m	
<b>Cost</b>					
At 1 July 2018	27.6	2.2	24.8	20.3	74.9
Acquisition of business (Note 14(b))	9.7	-	-	-	9.7
Additions	-	-	1.5	7.6	9.1
Disposals	-	-	(0.5)	(0.2)	(0.7)
Exchange rate adjustments	0.3	-	0.1	0.4	0.8
<b>At 30 June 2019</b>	<b>37.6</b>	<b>2.2</b>	<b>25.9</b>	<b>28.1</b>	<b>93.8</b>
Acquisition of business (Note 14(a))	1.3	-	-	-	1.3
Additions	-	-	1.2	8.0	9.2
Disposals	-	-	(2.8)	(0.1)	(2.9)
Reclassifications	-	-	(0.6)	0.6	-
Exchange rate adjustments	0.3	-	0.2	0.6	1.1
<b>At 30 June 2020</b>	<b>39.2</b>	<b>2.2</b>	<b>23.9</b>	<b>37.2</b>	<b>102.5</b>
<b>Accumulated amortisation</b>					
At 1 July 2018	14.0	1.2	18.1	9.9	43.2
Charge for the year	3.6	0.4	2.3	3.5	9.8
Assets classified as held for sale (Note 19)	-	-	(0.5)	(0.2)	(0.7)
Exchange rate adjustments	0.1	0.1	0.1	0.2	0.5
<b>At 30 June 2019</b>	<b>17.7</b>	<b>1.7</b>	<b>20.0</b>	<b>13.4</b>	<b>52.8</b>
Charge for the year	5.5	0.4	1.9	4.2	12.0
Disposals	-	-	(2.8)	-	(2.8)
Reclassifications	-	-	(0.5)	0.5	-
Exchange rate adjustments	0.3	-	-	0.3	0.6
<b>At 30 June 2020</b>	<b>23.5</b>	<b>2.1</b>	<b>18.6</b>	<b>18.4</b>	<b>62.6</b>
Net book value					
<b>At 30 June 2020</b>	<b>15.7</b>	<b>0.1</b>	<b>5.3</b>	<b>18.8</b>	<b>39.9</b>
At 30 June 2019	19.9	0.5	5.9	14.7	41.0
At 30 June 2018	13.6	1.0	6.7	10.4	31.7

Customer contracts and relationships were primarily identified as part of the previous acquisitions of LR Rail and Transport Engineering (see Note 14(b)). The assets specific to these acquisitions have carrying values of £5.6m (2019: £7.4m) and £7.8m (2019: £9.5m) and have remaining amortisation periods of three and four years, respectively. Customer contracts and relationships were also identified as part of the acquisition in the current year of PLC Consulting (see Note 14(a)) which have a carrying value of £0.9m and a remaining amortisation period of two years.

Software which is not acquired through business combinations primarily comprises costs that have been capitalised in respect of an internally developed ERP system. The ERP system has a carrying value of £1.4m (2019: £1.9m) and has a remaining amortisation period of three years. Software includes £1.6m (2019: £0.9m) in respect of assets under construction which are not being amortised until the assets are made available for use.

Development costs are incurred to develop and regularly update a suite of simulation and analysis software tools used in the Automotive sector, but also with applications in other sectors. The suite of assets have a carrying value of £6.2m (2019: £5.0m) and an amortisation period of three years is applied to each annual update when released. Development costs also include a patented system that combines anti-lock braking and electronic stability control ('ABS/ESC') to mitigate rollover fatalities commonly associated with the High Mobility Multipurpose Wheeled Vehicle ('HMMWV' or 'Humvee'). The asset has a carrying value of £2.6m (2019: £2.4m). £0.4m of additional development expenditure was added to the asset during the year for the development of variance of the ABS brake kit to be fitted on other versions of the HMMWV. Development costs also include £1.3m (2019: £0.3m) for a plug-in hybrid demonstration vehicle which highlights the latest technology to vehicle manufactures.

In addition, development costs include £3.9m (2019: £5.3m) in respect of assets under construction which are not being amortised until the assets are made available for use. Development costs under construction include assets such as engineering software updates under development, together with new technology, tools and processes in the A&I and EE segments.

The amortisation charge of £12.0m (2019: £9.8m) is comprised of £3.3m (2019: £2.4m) included within cost of sales and £8.7m (2019: £7.4m) included within administrative expenses in the income statement, of which £6.0m (2019: £4.0m) relates to acquired intangible assets and is presented within specific adjusting items, as set out in Note 7.

## 17. Property, plant and equipment

### Property, plant and equipment accounting policy – Note 1(m)

	Freehold land and buildings	Leasehold properties	Plant and machinery	Fixtures, fittings and equipment	Total
	£m	£m	£m	£m	£m
<b>Cost</b>					
At 1 July 2018	20.5	4.5	99.3	23.7	148.0
Acquisition of business (Note 14(b))	-	-	0.1	-	0.1
Additions	0.5	0.5	4.6	2.0	7.6
Disposals	-	-	(5.0)	(1.9)	(6.9)
Assets classified as held for sale (Note 19)	-	-	(19.5)	-	(19.5)
Reclassifications	(0.6)	0.6	0.6	(0.6)	-
Exchange rate adjustments	-	0.1	0.6	0.2	0.9
<b>At 30 June 2019</b>	<b>20.4</b>	<b>5.7</b>	<b>80.7</b>	<b>23.4</b>	<b>130.2</b>
Additions	14.6	0.1	5.4	1.9	22.0
Disposals	-	(1.6)	(1.7)	(1.7)	(5.0)
Assets classified as held for sale (Note 19)	(14.2)	-	(1.1)	-	(15.3)
Reclassifications	0.3	0.2	(1.2)	0.7	-
Exchange rate adjustments	-	-	0.2	0.1	0.3
<b>At 30 June 2020</b>	<b>21.1</b>	<b>4.4</b>	<b>82.3</b>	<b>24.4</b>	<b>132.2</b>
<b>Accumulated amortisation</b>					
At 1 July 2018	4.5	2.4	77.8	18.0	102.7
Charge for the year	0.4	0.4	2.8	2.0	5.6
Disposals	(0.3)	0.3	(5.0)	(1.9)	(6.9)
Assets classified as held for sale (Note 19)	-	-	(16.6)	-	(16.6)
Exchange rate adjustments	-	-	0.7	0.1	0.8
<b>At 30 June 2019</b>	<b>4.6</b>	<b>3.1</b>	<b>59.7</b>	<b>18.2</b>	<b>85.6</b>
Charge for the year	0.5	0.3	2.9	2.0	5.7
Impairment loss	5.6	-	-	-	5.6
Disposals	-	(1.4)	(1.8)	(1.7)	(4.9)
Assets classified as held for sale (Note 19)	(5.6)	-	-	-	(5.6)
Reclassifications	(0.2)	0.1	-	0.1	-
Exchange rate adjustments	-	0.1	0.2	0.1	0.4
<b>At 30 June 2020</b>	<b>4.9</b>	<b>2.2</b>	<b>61.0</b>	<b>18.7</b>	<b>86.8</b>
<b>Net book value</b>					
<b>At 30 June 2020</b>	<b>16.2</b>	<b>2.2</b>	<b>21.3</b>	<b>5.7</b>	<b>45.4</b>
At 30 June 2019	15.8	2.6	21.0	5.2	44.6
At 30 June 2018	16.0	2.1	21.5	5.7	45.3

The carrying value of assets under construction included in property, plant and equipment amounts to £8.4m (2019: £5.0m). Property, plant and equipment under construction includes a hybrid powertrain rig within plant and machinery with a carrying value of £4.4m (2019: £1.8m). Amortisation is expected to commence in the next financial year.

At 30 June 2020, the Group had plant and machinery financed through a hire-purchase agreement and secured on the asset (see Note 25) with a carrying value of £0.6m (2019: £0.7m). As disclosed in Note 36, a guarantee was provided to the Ricardo Group Pension Fund ('RGPF') of £2.8m in respect of certain contingent liabilities that may arise, which have been secured on freehold land and buildings with a carrying value of £16.2m (2019: £15.8m).

At 30 June 2020, contracts had been placed for future capital expenditure, which have not been provided for in the financial statements, amounting to £1.2m (2019: £1.7m).

As explained in Note 7, on 21 August 2019, the Group purchased the freehold property of DTC, comprising the north building, which housed the test cell assets, and the south office building, for £14.2m (USD 17.3m), which is included in freehold land and buildings above. Subsequently, the Group commenced a process to market the newly acquired freehold property, together with the DTC test cell assets. The freehold property was immediately written down to £8.6m (USD 10.5m) as part of being classified as held for sale (see Note 19), as the purchase price was predicated on Ricardo's long-term tenancy, crystallising an impairment charge of £5.6m as disclosed in the table above. The net book value of £8.6m was transferred to non-current assets held for sale. The impairment charge was partially offset by the write-off of a £3.1m (USD 4.0m) net lease liability under IFRS 16. Whilst being treated as held for sale, a further £1.1m (USD 1.3m) impairment as recognised, as disclosed in Note 19. Due to the nature and significance of the amount the impairment charge (together with the balance of the lease liability) have been recognised in the income statement within specific adjusting items. They are included within the A&I segment and within administrative expenses in the reported result.

## 18. Right-of-use assets, lease liabilities and lease receivables

### Leases accounting policy – Note 1(n)

#### (a) Leasing activities as lessee

The Group leases various office premises and technical centres, vehicles and other equipment.

Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions.

Property lease terms range from three months to 21 years, with an average of five years, and may have extension or termination options. The impact of exercising these options, where not currently considered reasonably certain, is quantified below. There are several property subleases within the group - see Note 18(b) below.

Other lease terms range from one to 12 years, with an average of four years.

The lease agreements do not impose any covenants. Leased assets may not be used as security for borrowing purposes.

Where leases are short-term and/or leases of low-value items, the Group has elected not to recognise right-of-use assets and lease liabilities for these leases.

Until the 2019/20 financial year, all leases were classified as operating leases under IAS 17. From 1 July 2019, leases are recognised as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the group.

Information about leases for which the Group is a lessee is presented below.

#### (i) Right-of-use assets

	Property £m	Plant and machinery £m	Fixtures, fittings and equipment £m	Total £m
<b>Cost</b>				
At 30 June 2019	-	-	-	-
Adoption of IFRS 16 (Note 2)	52.4	0.6	0.4	53.4
At 1 July 2019	52.4	0.6	0.4	53.4
Additions	5.3	0.4	-	5.7
Disposals	(10.3)	-	-	(10.3)
Remeasurements	(13.3)	-	-	(13.3)
Exchange rate adjustments	0.5	-	-	0.5
<b>At 30 June 2020</b>	<b>34.6</b>	<b>1.0</b>	<b>0.4</b>	<b>36.0</b>
<b>Accumulated depreciation and impairment</b>				
At 30 June 2019	-	-	-	-
Adoption of IFRS 16 (Note 2)	16.3	-	-	16.3
At 1 July 2019	16.3	-	-	16.3
Charge for the period	4.9	0.4	0.1	5.4
Impairment	0.5	-	-	0.5
Disposals	(10.3)	-	-	(10.3)
Exchange rate adjustments	0.2	-	-	0.2
<b>At 30 June 2020</b>	<b>11.6</b>	<b>0.4</b>	<b>0.1</b>	<b>12.1</b>
<b>Net book value</b>				
<b>At 30 June 2020</b>	<b>23.0</b>	<b>0.6</b>	<b>0.3</b>	<b>23.9</b>
At 1 July 2019	36.1	0.6	0.4	37.1
At 30 June 2019	-	-	-	-

An impairment charge of £0.3m was recognised in respect of the vacant portion of the Cambridge Technical Centre and an impairment charge of £0.2m related to the exit of the Santa Clara Technical Centre (Note 7).

The purchase of the freehold of the Detroit Technology Campus, previously leased by the Group, resulted in remeasurements which reduced the lease liability and the right-of-use asset by £14.2m and £11.1m respectively. The £3.1m excess of the lease liability over the carrying value of the right-of-use assets is recognised as income within administrative expenses, and included in "Reorganisation costs: Purchases and disposals" within specific adjusting items (Note 7).

Other reassessments of lease terms resulted in a remeasurements which increased both the right-of-use asset and the lease liability by £2.4m

The net book value of Property above is shown net of £1.0m (2019: £1.1m) in respect of consideration received as part of a historical sale and leaseback transaction, deemed to be an incentive for extending the lease term.

The lessee's incremental borrowing rate applied to lease liabilities recognised in the statement of financial position at the date of initial application vary due to length and geographical location and are as follows:

- Property – 1.8% to 4.8%
- Plant and machinery – 2% to 4.2%
- Fixtures, fittings and equipment - 2% to 4.2%



## 18. Right-of-use assets, lease liabilities and lease receivables (continued)

The following amounts are included in the income statement relating to short-term and low value leases:

	2020
	£m
Expense relating leases not capitalised, and expensed to the income statement	
Short-term leases	1.2
Low-value leases (not including short-term leases above)	0.1
<b>Total</b>	<b>1.3</b>

An impairment charge of £0.3m was recognised to reflect the fact that part of the Cambridge Technical Centre (CaTC) was vacant at the end of the year and is expected to remain so. This is recognised within administrative expenses, and included in "Reorganisation costs: Other reorganisation costs" within specific adjusting items (Note 7).

As at 30 June 2020, potential future cash outflows of £9.8m (undiscounted) have not been included in the lease liability because it is not reasonably certain that the leases will be extended (or not terminated).

### (ii) Right-of-use – lease liabilities

Movement in lease liability	Note	£m
Adoption of IFRS 16	2	45.6
New leases		5.7
Interest	10	1.2
Payments		(6.8)
Disposals		(13.6)
Remeasurements		(3.0)
Exchange rate adjustments		0.2
<b>At 30 June 2020</b>		<b>29.3</b>

Lease liability	£m
Current liabilities - maturing within one year	6.7
Non-current liabilities - maturing after one year	22.6
<b>At 30 June 2020</b>	<b>29.3</b>

The maturity analysis of this liability is shown Note 27(c).

### (b) Leasing activities as lessor

The Group subleases out several parts of its leased property. All subleases are classified as operating leases from a lessor perspective with the exception of one sub-lease, which the Group has classified as a finance sublease. Information about leases for which the Group is a lessor is presented below.

#### (i) Finance Lease

During the year, the Group recognised finance income of £0.1m relating to its lease receivable.

The following table sets out the movements in the lease receivable balance during the year.

Lease receivable	Note	£m
Adoption of IFRS 16	2	2.3
Interest	10	0.1
Receipts		(0.2)
Exchange rate adjustments		0.1
<b>At 30 June 2020</b>	23	<b>2.3</b>

The following table sets out a maturity analysis of lease receivable, showing the undiscounted lease payments to be received after the reporting date:

	2020
	£m
Maturity of lease receivable	
Less than one year	0.2
One to two years	0.2
Two to three years	0.2
Three to four years	0.2
Four to five years	0.2
More than five years	2.2
<b>Total undiscounted lease receivable</b>	<b>3.2</b>
Unearned finance income	(0.9)
<b>Net investment in the lease</b>	<b>2.3</b>

This is a back-to-back lease with a right-of-use asset. As a finance lease this is included in other receivables. See Note 23.

## 18. Right-of-use assets, lease liabilities and lease receivables (continued)

### (ii) Operating lease

During the year, the Group recognised rental income of £1.1m (2019: £0.9m) relating to operating leases.

The following table sets out a maturity analysis of lease payments, showing the undiscounted lease payments to be received after the reporting date.

Maturity of lease payments	2020 £m
Less than one year	1.7
One to two years	1.2
Two to three years	0.7
Three to four years	0.7
Four to five years	0.6
More than five years	0.3
<b>Total</b>	<b>5.2</b>

## 19. Non-current assets held for sale

### Non-current assets held for sale accounting policy – Note 1(o)

Movement in held for sale	Note	Freehold land and buildings £m	Plant and machinery £m	Total £m
At 30 June 2019		-	2.9	2.9
Transferred from property, plant and equipment	17	8.6	1.1	9.7
Disposals		(2.1)	(4.0)	(6.1)
Impairment loss		(1.1)	-	(1.1)
Exchange rate adjustments		(0.1)	-	(0.1)
<b>At 30 June</b>		<b>5.3</b>	<b>-</b>	<b>5.3</b>

In January 2019, the Directors made a decision to commence a process to market actively its test cell assets at DTC for sale, which had a net book value of £2.9m (USD 3.7m) at 1 July 2019. During the year, the Group continued to invest in these assets to improve their desirability, increasing the held for sale net book value to £4.0m (USD 4.9m). These assets were sold on 3 June 2020, as discussed below.

As explained in Note 7, on 21 August 2019, the Group purchased the freehold property of DTC, comprising the north building, which housed the test cell assets, and the south office building, for £14.2m (USD 17.3m). Subsequently, the Group commenced a process to market the newly acquired freehold property, together with the DTC test cell assets. The freehold property was immediately written down to £8.6m (USD 10.5m) as part of being classified as held for sale, as the purchase price was predicated on Ricardo's long-term tenancy, crystallising an impairment charge of £5.6m. The impairment charge was partially offset by the write-off of a £3.1m (USD 4.0m) net lease liability under IFRS 16. The DTC north building was sold on 3 June 2020, as discussed below. The DTC south building is still being marketed and remains held for sale at a value of £5.3m (USD 6.5m), as a further impairment charge of £1.1m (USD 1.3m) was recognised to reflect current market conditions. Due to the nature and significance of the amount the impairment charge (together with the balance of the lease liability) have been recognised in the income statement within specific adjusting items. They are included within the A&I segment and within administrative expenses in the reported result.

### Detroit test cell business and north building of Detroit Technology Campus

Fair value of cash consideration	£m
Initial cash consideration	2.8
Provisional fair value of contingent cash consideration:	
- Less than one year	0.5
- More than one year	0.7
<b>Total fair value of cash consideration</b>	<b>4.0</b>
Carrying value of property, plant and equipment disposed	
- Leasehold property	(2.1)
- Plant and machinery	(4.0)
<b>Total carrying value of property, plant and equipment disposed</b>	<b>(6.1)</b>
<b>Loss on disposal before tax</b>	<b>(2.1)</b>

## 19. Non-current assets held for sale (continued)

In June 2020, the Group sold the test cell assets and the DTC north building to a non-competitive strategic partner for an initial cash consideration of £2.8m (USD 3.5m), which could increase to a maximum of £4.4m (USD 5.5m), depending on the volume of testing work placed into the facility by Ricardo over the next two years. The total fair value of cash consideration is £4.0m (USD 4.9m), which includes the accrued provisional fair value of contingent cash consideration payable of £1.2m (USD 1.5m). A loss of £2.1m (USD 2.6m) was recognised on the sale. Due to the nature and significance of the amount, the loss on disposal was recognised in the income statement within specific adjusting items.

## 20. Provisions for liabilities and charges

### Provisions for liabilities and charges accounting policy – Note 1(p)

	Warranty	Restructuring costs	Employment-related benefits	Other	Total
	£m	£m	£m	£m	£m
At 30 June 2018	2.0	2.4	1.0	0.3	5.7
Charged to the income statement	1.8	0.2	0.4	0.1	2.5
Utilised in the year	(0.6)	(1.3)	-	-	(1.9)
Released in the year	(0.3)	(0.1)	-	-	(0.4)
At 30 June 2019	2.9	1.2	1.4	0.4	5.9
Adoption of IFRS 16 (Note 2)	-	(0.5)	-	-	(0.5)
At 1 July 2019 (adjusted)	2.9	0.7	1.4	0.4	5.4
Charged to the income statement	1.3	1.5	0.4	-	3.2
Utilised in the year	(1.0)	(0.5)	(0.1)	-	(1.6)
Released in the year	(0.4)	-	(0.1)	-	(0.5)
<b>At 30 June 2020</b>	<b>2.8</b>	<b>1.7</b>	<b>1.6</b>	<b>0.4</b>	<b>6.5</b>
				<b>2020</b>	2019
				£m	£m
Current				<b>3.2</b>	2.2
Non-current				<b>3.3</b>	3.7
<b>At 30 June</b>				<b>6.5</b>	5.9

The warranty provision reflects the Directors' best estimate of the cost required to full the Group's assurance-type warranty obligations within a number of contracts. Subsequent to their initial recognition, warranty provisions are utilised or released over the periods of the various warranty obligations, which are expected to be less than five years.

The provision for restructuring costs included amounts payable to former employees who have been made redundant, primarily as part of the reorganisation of our A&I and Rail segments, as set out in further detail in Note 7. The element of the provision relating to redundancy costs was partially utilised during the year with the remaining balance expected to be utilised in less than one year. Provisions for onerous lease obligations were also included in the prior year. On adoption of IFRS 16, these onerous lease balances were transferred against the right-of-use asset from provisions (see Note 2). A provision still remains for a proportion of the service charge costs of the remaining lease period.

Employment-related benefits are statutory provisions which include long-service awards and termination indemnity schemes. The timing of the cash outflows is dependent upon the retirement or attrition of employees, but is predominantly expected to be more than five years.

Other provisions comprise expected costs of legal claims and litigation, together with dilapidation and restoration costs for leasehold property. The associated cash outflows for legal claims and litigation are predominantly expected to be less than one year. Dilapidation and restoration costs reflects the Directors' best estimate of future obligations relating to the maintenance and restoration of leasehold properties arising from past contractual commitments to new, extended or terminated lease agreements. Restoration costs expected at the commencement of the lease are included within the right-of-use asset value (see Note 18(a)). The timing of the cash outflows is dependent upon the remaining term of the associated leases and are subject to negotiation.



## 21. Deferred tax

This note explains how our Group deferred tax charge arises and also provides information on our expected future tax charges and sets out the tax assets held across the Group together with our view on whether or not we expect to be able to make use of these in the future.

### Deferred tax accounting policy – Note 1(q)

	2020	2019
	£m	£m
Non-current		
Assets	9.4	6.7
Liabilities	(5.6)	(7.3)
<b>At 30 June</b>	<b>3.8</b>	<b>(0.6)</b>

	Accelerated capital allowances	Defined benefit obligation	Tax losses and credits	Unrealised capital gains	Other	Total
	£m	£m	£m	£m	£m	£m
At 1 July 2018	(3.5)	0.7	5.8	(0.4)	2.1	4.7
Arising on acquisition (Note 14(b))	-	-	-	-	(2.9)	(2.9)
Charged to the income statement	(1.3)	(0.7)	(0.1)	-	(1.9)	(4.0)
Charged to other comprehensive income	-	1.4	-	-	-	1.4
Exchange rate adjustments	-	-	(0.1)	-	0.3	0.2
At 30 June 2019	(4.8)	1.4	5.6	(0.4)	(2.4)	(0.6)
Adoption of IFRS 16 (see Note 2)	-	-	-	-	1.1	1.1
At 1 July 2019 (adjusted)	(4.8)	1.4	5.6	(0.4)	(1.3)	0.5
Arising on acquisition (Note 14(a))	-	-	-	-	(0.4)	(0.4)
Credited/(charged) to the income statement	0.2	(1.2)	2.0	-	1.4	2.4
Credited to other comprehensive income	-	1.0	-	-	0.1	1.1
Exchange rate adjustments	-	-	-	-	0.2	0.2
<b>Net (liabilities)/assets at 30 June 2020</b>	<b>(4.6)</b>	<b>1.2</b>	<b>7.6</b>	<b>(0.4)</b>	<b>-</b>	<b>3.8</b>

At 30 June 2020 and 30 June 2019 there were no temporary differences associated with undistributed earnings of subsidiaries for which deferred tax liabilities have been recognised. No liability would be recognised in respect of these differences because the Group is in a position to control the timing of the reversal of the temporary differences and it is probable that such differences will not reverse in the foreseeable future. A deferred tax asset continues to be recognised in the United States as at 30 June 2020 in respect of historic research and development claims ('R&D credits') that can be utilised against future taxable profits. These R&D credits carry a 20-year statute of limitation and must be utilised within that period. The carrying value of the R&D credits recognised at 30 June 2020 is £4.8m (USD 6.3m) (2019: £4.9m (USD 6.3m)). A deferred tax asset of £2.2m (USD 2.7m) is also recognised in the United States on current year trading losses. These losses can be carried back against the previous five years of taxable profit or carried forward against future taxable profits.

The deferred tax asset not recognised in respect of losses incurred in Germany as at 30 June 2020 amounts to £10.7m (EUR 11.9m) (2019: £10.9m (EUR 12.2m)). Due to the restructuring in Germany and the reduction in activity in Germany in recent years, the Directors consider it unlikely that sufficient future taxable profits will be available in Germany in the foreseeable future against which the carrying value of the brought forward deferred tax asset can be utilised.

The Directors have performed an assessment and consider that it is probable that future taxable profits will be available in the United States against which the carrying value of the recognised deferred tax asset can be utilised in the foreseeable future. This assessment was based on a review of the projected annual profit before tax of the consolidated tax group in the United States, based upon the latest Board-approved budgets and business plans for the next three years, together with long-term growth assumptions based on prevailing inflation and economic growth rates. Based on the 'base case' assumptions, the entire deferred tax asset is forecast to be predominantly utilised by 30 June 2022, with each individual R&D credit being utilised in no less than three years before the expiry of its 20-year statute of limitation period. The assessment was subject to reverse-stress testing, the results of which did not change management's view of the recoverability of the asset.

## Working capital

The net cash inflow from working capital was £8.5m in the year (£4.5m excluding the impact of specific adjusting items). This is due to a strong focus on working capital management combined with lower levels of trading in the year.

### 22. Inventories

#### Inventories accounting policy – Note 1(r)

	2020	2019
	£m	£m
Raw materials and consumables	13.6	9.5
Work in progress	4.6	3.9
Finished goods	1.9	1.1
<b>At 30 June</b>	<b>20.1</b>	<b>14.5</b>

Inventories of £51.5m (2019: £70.9m) were recognised as an expense during the year and included in cost of sales. During the year £0.3m (2019: £0.4m) of inventory was written down and also included in cost of sales.

### 23. Trade, contract and other receivables

Trade, contract and other receivables mainly consist of amounts owed to us by customers and amounts that we pay to our suppliers in advance. The note also includes contract assets, which represent an asset for accrued revenue in respect of goods or services delivered to customers for which a trade receivable does not yet exist.

#### Trade, contract and other receivables accounting policy – Note 1(s)

#### Critical judgements: Impairment of financial assets – Note 1(c)

	2020	2019
	£m	£m
Trade receivables	43.8	65.3
Less provision for impairment of trade receivables	(3.8)	(2.8)
Trade receivables – net	40.0	62.5
Contract assets:		
- Amounts recoverable on contracts ('AROC')	53.3	54.1
- Accrued revenue	0.7	1.4
Prepayments	10.7	11.0
Lease receivable (Note 18(bi))	2.3	-
Other receivables	11.8	12.4
<b>At 30 June</b>	<b>118.8</b>	<b>141.4</b>
Current	115.6	141.4
Non-current	3.2	-
<b>At 30 June</b>	<b>118.8</b>	<b>141.4</b>

The carrying amount at year-end is presented net of a provision for impairment of contract assets of £4.0m (2019: £1.1m). Contract assets are transferred to trade receivables when an invoice is issued to the customer. Payment terms typically range from immediate payment to 90 days after the invoice date and standard payment terms are usually 30 days after the invoice date. The net revenue recognised in the year from wholly or partially satisfied distinct performance obligations in previous years is £21.9m (2019: £25.9m). This is primarily due to the net impact of variation orders and cancellations for changes in scope and transaction price on contracts. Information about the Group's exposure of its trade receivables to credit and market risk is included in Notes 27(d) and 27(e).

Included within prepayments are £2.0m (2019: £2.3m) of assets recognised from the costs to obtain or fulfil an expected contract with a customer. No revenue has been recognised on these costs. An asset has been recognised because the costs directly related to an anticipated contract, they will be used in satisfying performance obligations in the future and the cost are expected to be recoverable.

The £3.2m non-current asset relates to other receivables. £2.3m of this relates to the IFRS 16 lease receivable as disclosed in Note 18. £0.7m is included within prepayments and is the non-current deferred consideration on the disposal of the DTC test asset business as disclosed in Note 19. £0.2m relates to other receivables.

	2020	2019
	£m	£m
Group provision for impairment of trade receivables	(2.8)	(1.1)
At 1 July	-	(2.4)
Transitional IFRS 9 adjustment to opening retained earnings	-	(2.4)
Net impairment/(reversals) to the income statement (Note 4)	(1.3)	0.6
Amounts utilised	0.3	0.1
<b>At 30 June</b>	<b>(3.8)</b>	<b>(2.8)</b>

## 23. Trade, contract and other receivables (continued)

### Order book

Order book comprises the value of all unworked purchase orders and contracts received from customers at the reporting date and provides an indication of the amount of revenue that has been secured and will be recognised in future accounting periods. Order book represents the transaction price allocated to wholly and partially unsatisfied distinct performance obligations, as defined by IFRS 15 *Revenue from Contracts with Customers*. The periods from 30 June in which the distinct performance obligations are expected to be satisfied are as follows:

	2020	2019
	£m	£m
Less than 6 months	125.8	145.7
6 to 12 months	76.9	66.8
Over 12 months	111.3	101.5
<b>At 30 June</b>	<b>314.0</b>	<b>314.0</b>

## 24. Trade, contract and other payables

Trade, contract and other payables mainly consist of amounts owed to suppliers that have been invoiced or are accrued and contract liabilities relating to consideration received from customers in advance. They also include taxes and social security amounts due in relation to the Group's role as an employer.

### Trade, contract and other payables accounting policy – Note 1(f)

	2020	2019
	£m	£m
Trade payables	9.6	21.3
Contract liabilities:		
- Payments received in advance on contracts ('POA')	22.0	24.5
- Deferred revenue	6.8	6.2
Tax and social security payable	9.5	7.7
Accruals	27.3	27.2
Other payables	0.4	3.0
<b>At 30 June</b>	<b>75.6</b>	<b>89.9</b>
Current	72.0	84.8
Non-current	3.6	5.1
<b>At 30 June</b>	<b>75.6</b>	<b>89.9</b>

Revenue recognised in the year from contract liabilities at the beginning of the year was £22.5m (2019: £24.9m). Contract liabilities primarily relate to the Group's obligation to perform services, which are paid by customers in advance of those services being provided. Contract liabilities have decreased due to changes in the mix of contracts containing upfront payment terms. Non-current amounts include accruals for the provisional fair value of contingent cash consideration payable for Transport Engineering of £2.1m (AUD 3.8m) (2019: £5.1m (AUD 9.4m)), as set out in Note 14(b), which is conditional on performance for the year to 30 June 2021.



# Net debt and financial risk management

Closing net debt was £73.4m (FY 2018/19: £47.4m), with the increase due to the purchase of the DTC facility, the acquisition of PLC Consulting (Note 14(a)) and net restructuring costs.

## 25. Net debt and borrowings

The objectives when managing capital are to safeguard the ability to continue as a going concern in order to provide returns for shareholders, benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital. Capital is monitored on the basis of the gearing ratio, which is calculated as net debt divided by total capital.

The majority of the Group's cash is held in bank deposits. The Group's sources of borrowing for funding and liquidity purposes come from the Group's £200.0m multi-currency revolving credit facility and through short-term overdraft facilities.

### Net debt and borrowings accounting policy – Note 1(u)

The disclosures in this note include certain Alternative Performance Measures (APMs). For more information on the APMs used by the Group, including definitions, please refer to Note 3.

#### (a) Gearing ratio

	2020	2019
	£m	£m
Net debt	73.4	47.4
Total equity	149.1	171.9
Total capital	222.5	219.3
<b>At 30 June</b>	<b>33.0%</b>	<b>21.6%</b>

#### (b) Net debt

	2020	2019
	£m	£m
Analysis of net debt		
Current assets - cash and cash equivalents:		
- Cash and cash equivalents	66.3	36.3
Total cash and cash equivalents	66.3	36.3
Current liabilities - borrowings:		
- Bank overdrafts repayable on demand	(10.5)	(3.9)
- Hire purchase liabilities maturing within one year	(0.1)	(0.1)
Total current borrowings	(10.6)	(4.0)
Non-current liabilities - borrowings:		
- Hire purchase liabilities maturing after one year	(0.4)	(0.6)
- Bank loans maturing after one year	(128.7)	(79.1)
Total non-current borrowings	(129.1)	(79.7)
At 30 June	(73.4)	(47.4)
Total cash and cash equivalents at 30 June	66.3	36.3
Total borrowings at 30 June	(139.7)	(83.7)
Total net debt at 30 June	(73.4)	(47.4)
	2020	2019
Movement in net debt	£m	£m
Net debt at beginning of year	(47.4)	(26.1)
Increase in cash and cash equivalents, and bank overdrafts	23.4	8.6
Repayments of/(proceeds from) hire purchase	0.2	(0.7)
Proceeds from bank loans	(140.3)	(64.0)
Repayments of bank loans	90.7	34.8
<b>At 30 June</b>	<b>(73.4)</b>	<b>(47.4)</b>

## 25. Net debt and borrowings (continued)

At the year-end, the Group had current hire-purchase liabilities of £0.1m and non-current finance lease liabilities of £0.4m. This hire-purchase agreement has an implicit rate of interest of 2.4%. The future undiscounted minimum lease payments due within one year is £0.1m and due after one year is £0.6m.

At the year-end, the Group held total banking facilities of £216.6m (2019: £166.4m), which included committed facilities of £200.0m (2019: £150.0m). The committed facility consists of a £200m multi-currency Revolving Credit Facility ('RCF') which provides the Group with committed funding through to July 2023. In addition, the Group has uncommitted facilities including overdrafts of £16.6m (2019: £16.4m), which mature throughout this and the next financial year and are renewable annually.

Non-current bank loans comprise committed facilities of £128.7m (2019: £79.1m), net of direct issue costs, which were drawn primarily to fund acquisitions and general corporate purposes. These are denominated in Pounds Sterling and have variable rates of interest dependent upon the Group's adjusted leverage, which range from 1.4% to 2.2% (2019: 1.4% to 2.2%) above LIBOR. Adjusted leverage is defined in the Group's banking documents as being the ratio of total net debt to adjusted EBITDA. Adjusted EBITDA is further defined as being operating profit before interest, tax, depreciation and amortisation, adjusted for any one-off, non-recurring, exceptional costs and acquisitions or disposals during the relevant period. At the reporting date, the Group has an adjusted leverage which attracts the lowest rate of interest, being LIBOR plus 1.4% (2019: LIBOR plus 1.4%). The Group has banking facilities for its UK companies which together have a net overdraft limit, but the balances are presented on a gross basis in the financial statements. After the reporting date, the Group completed an amendment of its banking facilities. Further detail is given in Note 39.

## 26. Fair value of financial assets and liabilities

### Fair value of financial assets and liabilities accounting policy – Note 1(v)

There are no differences between the fair value of financial assets and liabilities and their carrying value. The Group holds the following financial instruments:

	2020	2019
	£m	£m
<b>Financial assets</b>		
Amortised cost:		
- Trade receivables – net (Note 23)	40.0	62.5
- Lease receivable (Note 23)	2.3	-
- Other receivables (Note 23)	11.8	12.4
- Cash and cash equivalents (Note 25)	66.3	36.3
Fair value through other comprehensive income ('FVOCI'):		
- Fair value hedging instruments	3.9	0.3
<b>At 30 June</b>	<b>124.3</b>	<b>111.5</b>
<b>Financial liabilities</b>		
Amortised cost:		
- Borrowings (Note 25)	139.7	83.7
- Lease payables (Note 18)	29.3	-
- Trade payables (Note 24)	9.6	21.3
- Other payables (Note 24)	0.4	3.0
Fair value through other comprehensive income ('FVOCI'):		
- Fair value hedging instruments	(7.1)	1.1
Fair value through profit or loss ('FVTPL'):		
- Derivative financial liabilities	0.6	0.1
<b>At 30 June</b>	<b>172.5</b>	<b>109.2</b>

Net derivative financial expense of £0.5m (2019: £0.9m) relate to foreign exchange contracts.

## 26. Fair value of financial assets and liabilities (continued)

	2020 £m	2019 £m
<b>Measured at FVTPL</b>		
Foreign exchange swap contract assets:		
- Fair value gains	-	0.9
Foreign exchange forward contract liabilities:		
- Fair value losses	0.6	(0.1)
<b>At 30 June</b>	<b>0.6</b>	<b>0.8</b>
<b>Measured at FVOCI</b>		
Foreign exchange swap contract assets:		
- Fair value losses	(7.9)	(1.1)
- Fair value gains	5.7	1.1
Foreign exchange swap contract liabilities:		
- Fair value losses	(0.2)	(0.2)
- Fair value gains	2.3	0.3
<b>At 30 June</b>	<b>(0.1)</b>	<b>0.1</b>

### Reconciliation of movements of liabilities to cash flows arising from financing activities

	Note	Borrowings Note 25 £m	Lease liabilities Note 18(aii) £m	Total £m
At 1 July 2018		59.2	-	59.2
Changes from financing cash flows (see cash flow statement)				
- Proceeds from loans and borrowings		64.7	-	64.7
- Repayment of borrowings		(34.8)	-	(34.8)
- Movement in bank overdraft		(5.4)	-	(5.4)
Total changes from financing cash flows		24.5	-	24.5
Other changes				
- Interest expense	10	(2.6)	-	(2.6)
- Interest paid		2.6	-	2.6
Total other changes		-	-	-
<b>At 30 June 2019</b>		<b>83.7</b>	<b>-</b>	<b>83.7</b>
Adoption of IFRS 16	2	-	45.6	45.6
<b>At 1 July 2019</b>		<b>83.7</b>	<b>45.6</b>	<b>129.3</b>
Changes from financing cash flows (see cash flow statement):				
- Proceeds from loans and borrowings		140.3	-	140.3
- Repayment of borrowings		(90.7)	-	(90.7)
- Movement in bank overdraft		6.6	-	6.6
- Proceeds from lease liabilities		-	(5.6)	(5.6)
Total changes from financing cash flows		56.2	(5.6)	50.6
The effect of changes in foreign exchange rates	18(aii)	-	0.2	0.2
Other changes				
Liability-related				
- New leases	18(aii)	-	5.7	5.7
- Disposals	18(aii)	-	(13.6)	(13.6)
- Remeasurements	18(aii)	-	(3.0)	(3.0)
- Interest expense	10	3.2	1.2	4.4
- Interest paid		(3.4)	(1.2)	(4.6)
Total other changes		(0.2)	(10.9)	(11.1)
<b>At 30 June 2020</b>		<b>139.7</b>	<b>29.3</b>	<b>169.0</b>



## 27. Financial risk management

The financial risks faced by the Group comprise capital risk, liquidity risk, credit risk and market risk (comprising interest rate risk and foreign exchange risk). The Board reviews and agrees policies for managing each of these risks. The Group have no material exposure to commodity price fluctuations and this situation is not expected to change in the foreseeable future.

The financial instruments of the Group comprise floating rate borrowings, the main purpose of which is to raise finance for the Group's operations, and foreign exchange contracts used to manage currency risks.

### (a) Objectives, policies and strategies

The objectives when managing capital are to safeguard the ability to continue as a going concern in order to provide returns for shareholders, benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

### (b) Capital risk

Capital is monitored on the basis of the gearing ratio. This ratio is calculated as net debt divided by total capital. Net debt is calculated as borrowings less cash and cash equivalents. Total capital is calculated as equity, plus net debt. Please see Note 25.

### (c) Liquidity risk

The Group's policy towards managing its liquidity risks is to maintain a mix of short- and medium-term borrowing facilities. Short-term flexibility is provided by bank overdraft facilities. In addition, the Group maintains medium-term borrowing facilities in order to provide the appropriate level of finance to support current and future working capital requirements. As the cash profile on large contracts can vary significantly, the Group seeks committed facilities that provide sufficient headroom against forecast requirements to mitigate its exposure.

The tables below analyse the Group's external non-derivative financial liabilities into relevant maturity groupings, based on the remaining period at the reporting date to the contractual maturity date. All amounts disclosed in the tables below are the contractual undiscounted cash flows. These amounts approximate to their carrying amount as the impact of discounting on trade payables that mature after more than one year is insignificant and borrowings that mature after more than one year are primarily floating rate bank loans where payments are reset to market rates at regular short-term intervals.

Not included within the tables below are the following financial liabilities:

- Derivative financial liabilities as their contractual maturities are not considered to be essential for an understanding of the timing of the cash flows; and
- Other payables as the phasing of these liabilities is not contractually defined.

	2020	2019
	£m	£m
<b>Maturity of trade payables</b>		
Within 1 month	7.6	12.7
After 1 month and within 3 months	2.0	8.2
After 3 months and within 12 months	-	0.4
<b>At 30 June</b>	<b>9.6</b>	<b>21.3</b>

	2020	2019
	£m	£m
<b>Maturity of borrowings</b>		
Overdrafts repayable on demand	10.5	3.9
Within 12 months:		
- Hire purchase liabilities	0.1	0.1
After 12 months and within 5 years:		
- Hire purchase liabilities	0.4	0.6
- Bank loans	128.7	79.1
<b>At 30 June</b>	<b>139.7</b>	<b>83.7</b>

	2020	2019
	£m	£m
<b>Maturity of undiscounted lease liability</b>		
Within one year	7.0	-
Between one and five years	16.3	-
After five years	11.1	-
Finance portion of net liability	(5.1)	-
<b>At 30 June</b>	<b>29.3</b>	<b>-</b>

### (d) Credit risk

The Group is exposed to credit risk in respect of its trade receivables, which are stated net of provision for impairment. Exposure to this risk is mitigated by careful evaluation of the granting of credit and the use of credit insurance where practicable. Concentrations of credit risk with respect to trade receivables are limited due to the Group's customer base being large and unrelated.

## 27. Financial risk management (continued)

### (d) Credit risk (continued)

	2020	2019
	£m	£m
<b>Ageing of net trade receivables</b>		
Not overdue and not impaired	28.0	50.5
Overdue but not impaired:		
Less than 90 days overdue	8.9	10.5
91 to 180 days overdue	1.2	0.8
Over 180 days overdue	1.9	0.7
<b>At 30 June</b>	<b>40.0</b>	<b>62.5</b>

The Group's customers include the world's major transportation original equipment manufacturers, tier 1 suppliers, energy companies and government agencies. Revenue by customer location is disclosed within Note 4(b) and trade receivables are derived from these customer groups and locations.

We have limited experience of bad debts with any of these customers. Of the total net trade receivables balance as at 30 June 2020 of £40.0m (2019: £62.5m) £20.6m was received in July 2020 (2019: £36.6m).

An analysis of net trade receivables by currency is as follows:

	2020	2019
	£m	£m
<b>Group net trade receivables by currency</b>		
Pounds Sterling	15.9	31.1
Euros	6.8	8.7
US Dollars	7.3	12.9
Chinese Renminbi	5.2	5.8
Australian Dollars	1.1	-
Other currencies	3.7	4.0
<b>At 30 June</b>	<b>40.0</b>	<b>62.5</b>

The Group is exposed to bank credit risk in respect of money held on deposit and certain derivative transactions entered into with banks. Exposure to this form of risk is mitigated as material transactions are only undertaken with bank counterparties that have high credit ratings assigned by international credit-rating agencies. The Group further limits risk in this area by setting an overall credit limit for all transactions with each bank counterparty in accordance with the institution's credit standing.

	2020	2019
	£m	£m
<b>Maximum exposure to bank counterparty risk</b>		
Cash and cash equivalents	66.3	36.3
Derivative financial assets	3.9	0.3
<b>At 30 June</b>	<b>70.2</b>	<b>36.6</b>

	2020	2019
	£m	£m
<b>Analysis of cash and cash equivalents by geographic location</b>		
United Kingdom	37.9	10.5
Mainland Europe	7.2	4.3
North America	4.5	3.4
Asia	8.9	13.2
Australia	3.5	3.4
Rest of the World	4.3	1.5
<b>At 30 June</b>	<b>66.3</b>	<b>36.3</b>

### (e) Market risk

#### Interest rate risk

The Group's borrowings and cash balances held at floating interest rates are exposed to cash flow interest rate risk. As set out in further detail in Note 25, the exposure to interest rate movements is not currently hedged as the variable rates of interest are largely dependent upon the adjusted leverage of the Group, which is currently attracting the lowest possible rate of interest. The effect of any foreseen changes in the LIBOR remain unhedged, although the policy is reviewed on an ongoing basis.

	2020	2019
	£m	£m
<b>Financial assets and liabilities by interest type</b>		
Financial assets:		
- Fixed rate	2.3	-
- Floating rate	27.8	19.6
- Interest-free	94.2	91.9
Financial liabilities:		
- Fixed rate	(29.9)	(0.7)
- Floating rate	(136.1)	(83.0)
- Interest-free	(6.5)	(25.5)
<b>At 30 June</b>	<b>(48.2)</b>	<b>2.3</b>

## 27. Financial risk management (continued)

### (e) Market risk (continued)

#### Foreign exchange risk

The Group faces currency exposures on trading transactions undertaken by its subsidiaries in foreign currencies and balances arising there from, and on the translation of profits earned in, and net assets of, overseas subsidiaries primarily in the US, Europe and China. The carrying amounts of the Group's foreign currency denominated monetary assets and liabilities are:

	Assets		Liabilities	
	2020	2019	2020	2019
	£m	£m	£m	£m
<b>Maturity of borrowings</b>				
US Dollar	14.4	19.5	(2.7)	(2.5)
Euro	13.3	15.1	(5.4)	(6.8)
Chinese Renminbi	11.0	15.1	(1.2)	(0.4)

The following foreign exchange differences were (charged)/credited to the income statement for the Group:

	2020	2019
	£m	£m
<b>Financial assets and liabilities by interest type</b>		
Derivative contracts measured at FVTPL (Note 26):		
- Foreign exchange contract assets	-	0.9
- Foreign exchange contract liabilities	(2.2)	(0.1)
Other financial assets	1.1	(1.0)
Other financial liabilities	(0.5)	0.1
<b>At 30 June</b>	<b>(1.6)</b>	<b>(0.1)</b>

The Group does not to undertake any speculative currency transactions. The Group use derivative financial instruments primarily to manage currency risk on its US Dollar, Euro, Chinese Renminbi, Japanese Yen and Hong Kong Dollar denominated receivables from its subsidiaries, in addition to managing transactional exposures relating to customer contracts denominated in foreign currencies.

### (f) Sensitivity analysis of financial instruments to market risk

#### Exchange rate sensitivity

The Group has financial assets and liabilities denominated in foreign currencies, principally in US Dollars, Euros and Chinese Renminbi, which are not in the functional currency of the entity that holds them. A 20% change in the value of the US Dollar, Euro or Chinese Renminbi would have an immaterial impact on the value of these financial instruments at the year-end. Given the relative strengthening of the Group's principal foreign currencies against the Pound Sterling since the UK referendum vote to leave the EU, a 20% sensitivity in these exchange rates is deemed to be appropriate.

#### Interest rate sensitivity

A 1% increase in interest rates would have an insignificant impact on the value of the Group's floating rate financial instruments at the year-end. A 1% sensitivity is deemed to be appropriate as loans are based on LIBOR and so are unlikely to be subjected to significant fluctuations in interest rates in the foreseeable future.

### (g) Cash flow derivatives

The Group employs derivative financial instruments, including foreign exchange contracts, to mitigate currency exposures on trading transactions that could affect the income statement. Any change in the fair value of derivative foreign exchange forward and option contracts are recognised in the income statement. Changes in the fair value of effective derivative foreign exchange swap contracts are hedge accounted and recognised in other comprehensive income, with any ineffective amount recognised in the income statement.

Cash flows expected to occur from derivative financial instruments used by the Group for hedging purposes are set out below, which will be largely offset by cash flows expected to occur from hedged items:

	2020	2019
	£m	£m
<b>Affecting the income statement</b>		
Within 3 months	2.3	0.9
After 3 months and within 12 months	-	1.3
<b>At 30 June</b>	<b>2.3</b>	<b>2.2</b>
	2020	2019
	£m	£m
<b>Affecting other comprehensive income</b>		
Within 3 months	78.2	42.0
After 3 months and within 12 months	13.3	11.2
<b>At 30 June</b>	<b>91.5</b>	<b>53.2</b>



## Equity

Equity represents the capital of the Group attributable to Company shareholders and non-controlling interests, and includes share capital, share premium and reserves. Equity decreased in the year reflecting the Group's financial performance.

### 28. Share capital and share premium

	2020	2019
	£m	£m
Allotted, called-up and fully paid		
53,406,250 (2019: 53,406,250) ordinary shares of 25p each	13.4	13.4
<b>At 30 June</b>	<b>13.4</b>	<b>13.4</b>

No dividends were paid for interim and final dividends in respect of shares held by an Employee Benet Trust ('EBT') in relation to the LTIP. There were 41,193 such shares at 30 June 2020 (2019: 40,631 shares).

Share premium has remained £14.3m since 1 July 2018.

### 29. Other reserves

The merger reserve represents the amount by which the fair value of the shares issued as consideration for historic acquisitions exceeded their nominal value, offset by the goodwill on these acquisitions. The translation reserve comprises cumulative foreign exchange differences arising from the translation of financial statements of foreign operations on consolidation.

	Merger reserve	Translation reserve	Total
	£m	£m	£m
At 30 June 2018	1.0	14.7	15.7
Exchange rate adjustments	-	1.2	1.2
At 30 June 2019	1.0	15.9	16.9
Exchange rate adjustments	-	0.5	0.5
<b>At 30 June 2020</b>	<b>1.0</b>	<b>16.4</b>	<b>17.4</b>

### 30. Retained earnings

	Note	£m
At 1 July 2018		124.3
Profit for the year		19.8
Remeasurements of the defined benefit pension scheme	33	(7.9)
Deferred tax on remeasurements of the defined benefit pension scheme	21	1.4
Fair value gains on foreign currency cash flow hedges	26	0.1
Dividends paid	9	(11.0)
Purchases of own shares to settle awards		(0.9)
Equity-settled transactions	34	1.0
At 30 June 2019 (previously reported)		126.8
Adoption of IFRS 16 (net of tax)	2	(3.7)
At 1 July 2019 (adjusted)		123.1
Loss for the year		(6.5)
Remeasurements of the defined benefit pension scheme	33	(2.7)
Deferred tax on remeasurements of the defined benefit pension scheme	21	1.1
Fair value gains on foreign currency cash flow hedges	26	(0.1)
Dividends paid	9	(11.5)
Purchases of own shares to settle awards		(0.5)
Equity-settled transactions	34	0.6
<b>At 30 June 2020</b>		<b>103.5</b>

### 31. Non-controlling interests

In the opinion of the Directors, the comprehensive income for the year and equity at the reporting date which is attributable to non-controlling interests is not considered to be material. Non-controlling interests is as follows:

- C2D Joint Venture is 33.3% owned by Ricardo Defense, Inc.; 33.3% owned by DG Technologies; 33.3% owned by Claxton Logistics Services LLC.
- CDQ Joint Venture is 50% owned by Ricardo Defense, Inc.; 50% owned by DG Technologies
- Nanjing Delta Win Transportation Technical Services Limited is 40% owned by Ricardo Beijing Company Limited; 25% owned by Ricardo Hong Kong Limited; 35% owned by Jiangsu Urban Mass Transit Research & Design Institute Company Limited.

For their registered office and principal activities please see Note 37.

# Employees

This section contains information about the Group's current and former employees as well as the associated cost of employment and post-employment benefits incurred by the Group.

## 32. Employee number and costs

	2020	2019
Staff costs	£m	£m
Wages and salaries (including redundancy and termination costs)	162.3	153.6
Social security costs	15.6	15.8
Pension costs – defined contribution schemes	10.0	9.5
Share-based payments (Note 34)	0.6	1.0
<b>Total staff costs</b>	<b>188.5</b>	<b>179.9</b>

	2020	2019
Average monthly number of employees (including Executive Directors)	Number	Number
EE	554	476
Rail	629	566
A&I	1,165	1,232
Defense	147	128
PP	311	317
Other	189	180
Plc and Board	55	56
<b>Total average number of employees</b>	<b>3,050</b>	<b>2,955</b>

	2020	2019
Key management compensation	£m	£m
Short-term employee benefits	4.0	4.1
Share-based payments	0.5	0.5
Post-employment benefits	0.4	0.3
Termination benefits	0.1	-
<b>Total key management compensation</b>	<b>5.0</b>	<b>4.9</b>

Key management personnel are the Board of Directors, together with the Managing Directors who have the authority and responsibility for planning, directing and controlling the Group's activities and resources within the market sectors in which the Group operates. The remuneration received by all Executive and Non-Executive Directors during the year is disclosed in the Directors' Remuneration Report on page 106.

## 33. Retirement benefits

**Retirement benefits accounting policy – Note 1(w)**

**Key sources of estimation uncertainty: Defined benefit obligations – Note 1(c)**

The Group operates a defined benefit pension scheme, the Ricardo Group Pension Fund ("RGPF"), which closed to future accrual on 28 February 2010. Responsibility for the governance of the RGPF - including investment decisions and contribution schedules - lies with the Board of Trustees, with the assets held in the fund governed by local regulations and practice in the United Kingdom. The Board of Trustees must be comprised of representatives of the Group and RGPF participants in accordance with the RGPF's regulations. The last approved triennial valuation of the RGPF was completed with an effective date of 5 April 2017 and was approved on 24 September 2018. At the effective date, the assets of the RGPF had a market value of £134.0m and were sufficient to cover 86% of the benefit that had accrued to members when assessed on the Trustees' prudent funding basis. Annual contributions due to the RGPF during the year ending 30 June 2021 will be £4.6m and the Group has agreed with the Trustees that this will continue until 31 July 2022, in order to eliminate the Trustees' funding deficit revealed at the 5 April 2017 valuation. The latest triennial valuation with an effective date of 5 April 2020 has commenced, and this process is expected to complete in the year ending 30 June 2021. The results of the 2020 triennial valuation will determine whether the Group's current contribution commitment remains appropriate. The IAS 19 *Employee Benefits* valuation was completed as at 30 June 2020. The pension costs relating to the RGPF were assessed using the projected unit credit method, in accordance with the advice of Mercer, qualified actuaries.

From June 2016, the Group and Trustees decided to introduce a 'retirement flexibility' option to the RGPF, which allows members to transfer out their benefit at retirement. The Group continues to make no allowance within the defined benefit obligation as at 30 June 2020 for members who may elect to transfer out their benefits at retirement. This assumption will be reviewed on an ongoing basis and may change in future as experience emerges as to the level of members who elect to transfer out their benefits at retirement.

### 33. Retirement benefits (continued)

The assumption for Consumer Price Index ('CPI') inflation was revised to allow for a smaller expected future average gap between the Retail Price Index ('RPI') and CPI measures of inflation after consideration of proposals to amend the measurement of RPI to align it with the CPI including owner occupiers' housing costs ('CPIH') from between 2025 and 2030. The change in methodology relating to CPI from RPI minus 1% to RPI minus 0.7% resulted in a £2.0m impact.

The post-retirement mortality assumptions for the current year have been reviewed and use mortality tables known as the SAPS 'Series 2' tables, with an 83% (2019: 83%) multiplier for males and a 91% (2019: 91%) multiplier for females, both applicable to the 'standard' version of the table. The future improvements component has been updated to be in line with the Continuous Mortality Investigation ('CMI') 2019 projection model with an 'S-kappa' smoothing parameter of 7.5 and no initial smoothing adjustment (2019: CMI 2018 with 'S-kappa' smoothing parameter of 7.5 and no initial smoothing adjustment). The latest available CMI model will be used at each year-end to provide the most accurate representation of the defined benefit obligation. The use of a 1.25% long-term trend is consistent with the prior year. Under these principal mortality assumptions, the expected future life expectancy from age 65 is as follows:

Age	2020		2019	
	Males	Females	Males	Females
65 now	23.2	24.4	23.2	24.4
65 in 20 years	24.6	26.0	24.6	25.9

Other principal assumptions	2020	2019
	%	%
Discount rate	1.60	2.25
RPI inflation rate	2.90	3.25

Other assumptions	2020	2019
	%	%
Rate of increase in pensions in payment accrued:		
- Pre 1 July 2002	3.50	3.60
- Post 1 July 2002	2.80	3.05
- Post 88 GMP	1.85	1.90
Rate of increase in deferred pension revaluation	2.20	2.25
Percentage of pension to be commuted for a lump sum at retirement	15.00	15.00

Scheme assets	2020			2019		
	Quoted £m	Unquoted £m	Total £m	Quoted £m	Unquoted £m	Total £m
Equities	32.9	-	32.9	33.1	-	33.1
Debt	80.4	-	80.4	74.1	-	74.1
Cash and other	-	0.5	0.5	-	0.6	0.6
Property fund	-	7.6	7.6	-	7.9	7.9
Investment funds	29.0	-	29.0	21.8	-	21.8
<b>At 30 June</b>	<b>142.3</b>	<b>8.1</b>	<b>150.4</b>	129.0	8.5	137.5

The property fund relates a share of the BlackRock UK Property Fund ("Fund"). Real property is valued either on the basis of the open market value or under the premise of a forced sale. Property fund investments are valued by reference to the underlying value of assets or the latest available net asset value.



### 33. Retirement benefits (continued)

Movements in the fair value of scheme assets and present value of the defined benefit obligation were as follows:

	2020			2019		
	Fair value of plan assets	Present value of obligation	Net total	Fair value of plan assets	Present value of obligation	Net total
	£m	£m	£m	£m	£m	£m
At 1 July	137.5	(146.0)	(8.5)	131.0	(135.6)	(4.6)
Past service costs <sup>(1)</sup>	-	-	-	-	(0.5)	(0.5)
Gains on settlements	-	-	-	-	0.3	0.3
Finance income/(costs)	3.1	(3.2)	(0.1)	3.7	(3.8)	(0.1)
Total credit/(charge) to the income statement	3.1	(3.2)	(0.1)	3.7	(4.0)	(0.3)
Return on plan assets excluding finance income	11.2	-	11.2	7.9	-	7.9
Loss from change in demographic assumptions	-	0.4	0.4	-	(0.1)	(0.1)
Loss from change in financial assumptions	-	(15.3)	(15.3)	-	(15.7)	(15.7)
Experience gains	-	1.0	1.0	-	-	-
Total remeasurements in other comprehensive income	11.2	(13.9)	(2.7)	7.9	(15.8)	(7.9)
Contributions from sponsoring companies	4.6	-	4.6	4.3	-	4.3
Settlement payments from plan assets	-	-	-	(3.1)	3.1	-
Benefit payments from plan assets	(6.0)	6.0	-	(6.3)	6.3	-
Total cash flows	(1.4)	6.0	4.6	(5.1)	9.4	4.3
Total movements	12.9	(11.1)	1.8	6.5	(10.4)	(3.9)
<b>At 30 June</b>	<b>150.4</b>	<b>(157.1)</b>	<b>(6.7)</b>	<b>137.5</b>	<b>(146.0)</b>	<b>(8.5)</b>

(1) Past service costs for the prior year comprised £1.3m cost of Guaranteed Minimum Pension ('GMP') equalisation as described Note 7, offset by a £0.8m credit from plan amendments.

The sensitivity of the defined benefit obligation to changes in principal assumptions:	Change in assumption	Impact on present value of obligation
Discount rate	- 0.25%	Increase by £7.7m
Inflation rate	+ 0.25%	Increase by £4.2m
Post-retirement mortality assumptions	- 1 year	Increase by £6.5m

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice this is unlikely to occur and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions, the same method has been applied as when calculating the pension liability recognised within non-current liabilities. The methods and types of assumptions used in preparing the sensitivity analysis did not change when compared to the previous year. Exposure to significant risks from the RGPF are as follows:

Risks	Impact
Asset volatility	The RGPF liabilities are calculated using a discount rate set with reference to corporate bond yields. If the RGPF assets underperform this yield, the deficit will increase. The RGPF holds a significant proportion of equities and diversified growth funds, which are expected to outperform corporate bonds in the long-term while providing volatility and risk in the short-term. The Directors are of the view that due to the long-term nature of the RGPF liabilities and the strength of the supporting Group, this is an appropriate strategy to manage the RGPF efficiently.
Corporate bond yields	A decrease in corporate bond yields will increase RGPF liabilities, although this will be partially offset by an increase in the value of the RGPF's bond holdings. Brexit and COVID-19 have caused volatility in the market, which may continue to adversely affect corporate bond yields, with a corresponding impact on discount rates as described above.
Inflation	Although there are some caps in place to protect the RGPF against extreme inflation, increases in the level of inflation will lead to higher liabilities.
Post-retirement mortality assumptions	The RGPF provides benefits for the life of the members, therefore increases in post-retirement mortality assumptions will result in an increase in the RGPF's liabilities.

### 33. Retirement benefits (continued)

The weighted average duration of the defined benefit obligation is 18.0 (2019: 17.5) years.

	2020	2019
	£m	£m
<b>Expected maturity analysis of undiscounted pension benefits</b>		
Less than 1 year	4.5	4.3
Between 1 and 2 years	4.6	4.4
Between 2 and 5 years	14.8	14.2
Beyond 5 years	27.8	26.7
	2020	2019
	£m	£m
<b>Amounts charged/(credited) to the income statement in respect of the defined benefit obligation</b>		
Past service costs for:		
- GMP equalisation (Note 7)	-	1.3
- Plan amendments	-	(0.8)
Gains on settlements	-	(0.3)
Net financing costs (Note 10)	0.1	0.1
<b>Total</b>	<b>0.1</b>	<b>0.3</b>

### 34. Share-based payments

#### Share-based payments accounting policy – Note 1(x)

The Group operates the following share-based payment schemes: an equity-settled Executive Share Option Plan (the '2004 Plan'); an equity-settled and a cash-settled Long-Term Incentive Plan ('LTIP'); a Deferred Share Bonus Plan ('DBP') and an equity-settled all-employee Share Incentive Plan ('SIP'). The general terms and conditions, including vesting requirements and performance conditions for the 2004 Plan, the equity-settled LTIP, the DBP and the equity-settled SIP are described in the Directors' Remuneration Report. The 2004 Plan, LTIP, DBP and SIP require shareholder approval for the issue of shares. There were no awards outstanding in relation to the SIP at the year-end.

One third (2019: 50%) of awards granted under the LTIP and DBP Matching Awards are dependent on a Total Shareholder Return ('TSR') performance condition. As relative TSR is defined as a market condition under IFRS 2 Share-based Payment, this requires the valuation model used to take into account the anticipated performance outcome. The TSR element of the charge to the income statement has been calculated using the Monte Carlo model and the earnings per share ('EPS') element has been calculated using the Black Scholes model. The following assumptions are used for the plan cycles commencing in these years:

	2020	2019
Weighted average share price at date of award	640p	720p
Expected volatility	32.0%	27.0%
Expected life	3 yrs	3 yrs
Risk-free rate	0.4%	0.8%
Dividend yield	3.3%	2.8%
Possibility of ceasing employment before vesting	10.0%	10.0%
Weighted average fair value per LTIP as a percentage of a share at date of award	74.4%	72.2%

Expected volatility was determined by calculating the historical volatility of the Company's share price over the three financial years preceding the date of award. The share-based payments charge of £0.6m (2019: £1.0m) disclosed in Note 32 was all in respect of equity-settled schemes.

#### Equity-settled Long-Term Incentive Plan

The current LTIP is described in the Directors' Remuneration Report. Awards are forfeited if the employee leaves the Group before the awards vest, unless they are considered 'good leavers'.

### 34. Share-based payments (continued)

	2020 Shares allocated <sup>(1)</sup>	2019 Shares allocated <sup>(1)</sup>
<b>Outstanding</b>		
At 1 July	565,478	568,602
Awarded	358,135	247,187
Lapsed	(130,830)	(180,640)
Vested	(94,987)	(69,671)
Transferred to cash-settled	(4,000)	-
<b>At 30 June</b>	<b>693,796</b>	<b>565,478</b>

(1) Shares allocated excludes dividend roll-up.

The outstanding LTIP awards had a weighted average contractual life of 1.6 years (2019: 1.4 years). The weighted average exercise price in both 2020 and 2019 was £Nil. During the year, the Group cash purchased shares in order to settle vested awards. All shares that were vested during the year were also exercised for their price of nil.

#### Cash-settled Long-Term Incentive Plan

The cash-settled LTIP has the same performance conditions as the equity-settled LTIP but the award is settled in cash rather than by share issue.

	2020 Shares allocated <sup>(1)</sup>	2019 Shares allocated <sup>(1)</sup>
<b>Outstanding</b>		
At 1 July	8,000	10,759
Awarded	5,199	3,000
Forfeited	(1,500)	(3,184)
Vested	(4,000)	(2,575)
Transferred to cash-settled	4,000	-
<b>At 30 June</b>	<b>11,699</b>	<b>8,000</b>

(1) Shares allocated excludes dividend roll-up.

The outstanding LTIP awards had a weighted average contractual life of 2.0 years (2019: 1.2 years). The weighted average exercise price in both 2020 and 2019 was £Nil. During the year, the Group cash purchased shares in order to settle vested awards. The carrying value of the cash settled share based payments is nil (2019: £0.1m). All shares that were vested during the year were also exercised for their price of nil.

#### Deferred Share Bonus Plan

The Deferred Share Bonus Plan is described in the Directors' Remuneration Report.

	2020 Shares allocated <sup>(1)</sup>	2019 Shares allocated <sup>(1)</sup>
<b>Outstanding</b>		
At 1 July	169,874	154,250
Awarded	78,765	96,297
Forfeited	(22,390)	(28,975)
Dividend shares awarded in the year	3,738	3,029
Vested	(97,713)	(54,727)
<b>At 30 June</b>	<b>132,274</b>	<b>169,874</b>

(1) Shares allocated excludes dividend roll-up.

The outstanding DBP awards had a weighted average contractual life of 1.5 years (2019: 1.2 years). The weighted average exercise price in both 2020 and 2019 was £Nil. During the year, the Group cash purchased shares in order to settle vested awards. All shares that were vested during the year were also exercised for their price of nil.



## Unrecognised items and uncertain events

This section includes disclosure of items and transactions that are not reflected in the Group's results because they are uncertain or have been incurred after the end of the year. These disclosures are considered relevant to an understanding of the Group's financial position and the effect of expected or possible future events.

### 35. Commitments

At 30 June 2019 the Group's future aggregate undiscounted minimum lease payments under non-cancellable operating leases not recognised on the consolidated statement of financial position are as follows.

	2019
	£m
Lease liability	
By due date of commitments	
Within one year	8.6
Between one and five years	22.8
After five years	29.8
<b>At 30 June</b>	<b>61.2</b>

	2019
	£m
By nature of commitments	
Land and buildings	60.3
Other	0.9
<b>At 30 June</b>	<b>61.2</b>

From 1 July 2019, the Group has recognised right-of-use assets for these leases, except for short-term and low-value leases, see Note 2 and Note 18 for further information.

### 36. Contingent liabilities

In the ordinary course of business, the Group has £9.4m (2019: £7.3m) of possible obligations for bonds, guarantees and counter-indemnities placed with our banking and other financial institutions and primarily relating to performance under contracts with customers. These possible obligations are contingent on the outcome of uncertain future events which are considered unlikely to occur. The Group is also involved in commercial disputes and litigation with some customers, which is also in the normal course of business. Whilst the result of such disputes cannot be predicted with certainty, the ultimate resolution of these disputes is not expected to have a material effect on the Group's financial position or results.

In July 2013, a guarantee was provided to the Ricardo Group Pension Fund ('RGPF') of £2.8m in respect of certain contingent liabilities that may arise, which have been secured on specific land and buildings (see Note 17). The outcome of this matter is not expected to give rise to any material cost to the Group. In October 2018, a further guarantee was provided to the RGPF for an amount that shall not exceed the employers' liability were a debt to arise under Section 75 of the Pensions Act 1995. The guarantee will terminate on 5 April 2023. The outcome of this matter is not expected to give rise to any material cost to the Group on the basis that the Group continues as a going concern.

## Other

This section includes the Group's list of related undertakings and related party transactions.

### 37. Related undertakings of the Group

Subsidiary or related undertaking	Registered office	Principal activities
Ricardo Investments Limited <sup>(*)</sup>	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Holding Company and Management Services
Ricardo US Holdings, Inc.	40600 Ann Arbor Road East, Suite 201, Plymouth, Michigan, 48170, United States	Holding Company
Power Planning Associates Limited <sup>(**)</sup>	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Holding Company
Ricardo EMEA Limited <sup>(**)</sup>	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Holding Company and Management Services
Ricardo Real Estate LLC	40600 Ann Arbor Road East, Suite 201, Plymouth, Michigan, 48170, United States	Property Investment Company
Ricardo UK Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Automotive & Industrial Consulting, Strategic Consulting, Defence Consulting and Performance Products
Ricardo Asia Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Automotive & Industrial Consulting, Rail Consulting and Business Development
Ricardo Japan K.K.	18 <sup>th</sup> Floor, Shin Yokohama Square Building, 2-3-12 Shin Yokohama, Kohoku-ku, Yokohama-shi, Kanagawa, 222-0033, Japan	Automotive & Industrial Consulting, Rail Consulting and Business Development
Ricardo Shanghai Company Limited <sup>(**)</sup>	Floor 17, Phoenix Building, No. 1515 Gumei Road, Xuhui District, Shanghai, 200233, PR China	Automotive & Industrial Consulting, Rail Consulting and Business Development
Ricardo Prague s.r.o.	Palác Karlín, Thámova 11-13, 186 00 Praha 8, Czech Republic	Automotive & Industrial Consulting and Software
Ricardo GmbH	Güglingstraße 66, 73529, Schwäbisch Gmünd, Germany	Automotive & Industrial Consulting and Business Development
Ricardo Motorcycle Italia s.r.l.	Via Giovanni Pascoli 47, 47853, Cerasolo, Coriano, Rimini, Italy	Automotive & Industrial Consulting
Ricardo, Inc.	Detroit Technology Campus, 40000 Ricardo Drive, Van Buren Township, Detroit, Michigan, 48111-1641, United States	Automotive & Industrial Consulting, Strategic Consulting and Software
Ricardo India Private Limited <sup>(**)(1)</sup>	6 <sup>th</sup> Floor, M6 Plaza, Jasola District Centre, New Delhi 110076, India	Business Development
Ricardo Strategic Consulting GmbH	4 <sup>th</sup> Floor, Kreuzstraße 16, 80331, Munich, Germany	Strategic Consulting
Ricardo Defense Systems LLC	Detroit Technology Campus, 40000 Ricardo Drive, Van Buren Township, Detroit, Michigan, 48111-1641, United States	Performance Products
Ricardo Defense, Inc.	175 Cremona Drive, Suite 140, Goleta, California, 93117, United States	Defence Consulting
C2D Joint Venture (33.3%) <sup>(2)</sup>	175 Cremona Drive, Suite 140, Goleta, California, 93117, United States	Defence Consulting
Ricardo-AEA Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Energy & Environmental Consulting
Cascade Consulting (Environment & Planning) Limited <sup>(**)</sup>	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Energy & Environmental Consulting
Ricardo South Africa (Pty) Ltd (formerly PPA Energy (Pty) Ltd)	111 Pretoria Road, Rynfield, Benoni, 1501, South Africa	Energy & Environmental Consulting
Ricardo Gulf Technical Consultancy LLC (49%) <sup>(3)</sup>	11 <sup>th</sup> Floor, Office 8, MSMAC Building, Corniche Street, Abu Dhabi, United Arab Emirates	Energy & Environmental Consulting
Ricardo Energy Environment and Planning Pty Ltd	Level 20, 181 William Street, Melbourne, Victoria, 3000, Australia	Energy & Environmental Consulting
Ricardo Australia Pty Ltd	Level 7, 151 Clarence Street, Sydney, New South Wales, 2000, Australia	Energy & Environmental Consulting and Rail Consulting
Ricardo Rail Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom <sup>†</sup>	Rail Consulting
Ricardo Nederland B.V.	Catharijnesingel 33 J, 3511 GC, Utrecht, Netherlands	Rail Consulting
Ricardo Rail Australia Pty Ltd	Suite 2.01, Level 2, Tower B, The Zenith, 821 Pacific Highway, Chatswood, New South Wales, 2067, Australia	Rail Consulting

### 37. Related undertakings of the Group (continued)

Subsidiary or related undertaking	Registered office	Principal activities
Ricardo Singapore Pte Limited	141 Middle Road, 5-6 GSM Building, 188976, Singapore	Rail Consulting
Ricardo (Thailand) Ltd (49%) <sup>(4)</sup>	140/36 ITF Tower 17 <sup>th</sup> Floor, Silom Road, Kwang Surawong, Khet bangrak, Bangkok, 10500, Thailand	Rail Consulting
Ricardo Hong Kong Limited	Units 3210-18, 32/F Shui On Centre, 6-8 Harbour Road, Wanchai, Hong Kong	Rail Consulting
Ricardo Technical Consultancy LLC (49%) <sup>(5)</sup>	Palm Tower, Block B, 15 <sup>th</sup> Floor, P.O. Box 26600, West Bay, Doha, Qatar	Rail Consulting
Chongqing Transportation Railway Safety Assessment Center Limited (60%) <sup>(6)</sup>	No. 2 Yangliu Road, Mid Huangshan Street, New North District, Chongqing, 401123, PR China	Rail Consulting
Wamarragu Transport Services Pty Ltd (45%) <sup>(7)</sup>	Suite 2.01, Level 2, Tower B, The Zenith, 821 Pacific Highway, Chatswood, New South Wales, 2067, Australia	Rail Consulting
Ricardo Beijing Company Limited	1301-1302, Shun Tak Centre, No.1 Xiangheyuan Road, Dongcheng District, Beijing, 100004, PR China	Independent Assurance
Ricardo Certification Limited <sup>(8)</sup>	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Independent Assurance
Ricardo Certification B.V.	Catharijnesingel 33 J, 3511 GC, Utrecht, Netherlands	Independent Assurance
Ricardo Certification Denmark ApS	Nørre Farimagsgade 11, 1364 Copenhagen K, Copenhagen, Denmark	Independent Assurance
Ricardo Certification Iberia SL	Agustín de Foxá 29, 9 <sup>th</sup> Floor, 28036, Madrid, Spain	Independent Assurance
Ricardo Software, Inc.	Detroit Technology Campus, 40000 Ricardo Drive, Van Buren Township, Detroit, Michigan, 48111-1641, United States	Dormant
Ricardo Innovations Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
CDQ Joint Venture (50%) <sup>(8)</sup>	175 Cremona Drive, Suite 140, Goleta, California, 93117, United States	Dormant
Ricardo Software Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Certificación SL	Agustín de Foxá 29, 9 <sup>th</sup> Floor, 28036, Madrid, Spain	Dormant
Ricardo Environment Arabia LLC <sup>(9)</sup>	Bahrain Tower, Building Number 8953, 2393, King Fahd Road, Olaya, 12214, Kingdom of Saudi Arabia	Dormant
Ricardo Strategic Consulting Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Consulting Engineers Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Technology Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Technology Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Transmissions Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Pension Scheme (Trustees) Limited	Shoreham Technical Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex, BN43 5FG, United Kingdom†	Dormant
Ricardo Deutschland GmbH	Güglingstraße 66, 73529, Schwäbisch Gmünd, Germany	In Liquidation
Nanjing Delta Win Transportation Technical Services Limited (65%) <sup>(10)</sup>	Room 1101, No. 301, Zhongmen Street, Gulou District, Nanjing, Jiangsu Province, PR China	In Liquidation

† Registered in England and Wales

∞ These companies have claimed exemption from audit per 479A of the Companies Act 2006.

(1) 99% owned by Ricardo plc; 1% owned by Ricardo UK Limited.

(2) 33.3% owned by Ricardo Defense, Inc.; 33.3% owned by DG Technologies; 33.3% owned by Claxton Logistics Services LLC.

(3) 49% of share capital and 80% of retained earnings owned by Ricardo Rail Limited; 51% of share capital and 20% of retained earnings owned by SSD Commercial Investment

(4) 49% of share capital and 92.5% of retained earnings owned by Ricardo Hong Kong Limited; 51% of share capital and 7.5% of retained earnings owned by First Asia Industries Limited.

(5) 49% of share capital and 97% of retained earnings owned by Ricardo Rail Limited; 51% of share capital and 3% of retained earnings owned by Pro-Partnership LLC.

(6) 60% owned by Ricardo Beijing Company Limited; 40% owned by Chongqing Science & Technology Testing Center Limited.

(7) 45% owned by Ricardo Rail Australia Pty Ltd; 55% owned by Justin Brooker Nominees Pty Ltd. This associate undertaking is immaterial to the Group.

(8) 50% owned by Ricardo Defense, Inc.; 50% owned by DG Technologies.

(9) 15% owned by Ricardo plc; 85% owned by Ricardo-AEA Limited.

(10) 40% owned by Ricardo Beijing Company Limited; 25% owned by Ricardo Hong Kong Limited; 35% owned by Jiangsu Urban Mass Transit Research & Design Institute Company Limited.

In the opinion of the Directors, the comprehensive income for the year and equity at the reporting date which is attributable to non-controlling interests is not considered to be material. Non-controlling interests are set out above in Footnotes (2) to (8), and (10).

### 38. Related parties' transactions

The Chair of Ricardo plc, Sir Terry Morgan, was also a statutory director of Crossrail Limited until 5 December 2018, which was deemed to be a related party that is external to the Ricardo Group up to that date.

	2020	2019
	£m	£m
Transactions between the Group and Crossrail Limited		
<b>Sale of services</b>	-	0.7

Key management personnel are the Board of Directors, together with the Managing Directors who have the authority and responsibility for planning, directing and controlling the Group's activities and resources within the market sectors in which the Group operates. This is set out in Note 32.

The remuneration received by all Executive and Non-Executive Directors during the year is disclosed in the Directors' Remuneration Report on page 102.

The Ricardo Pension Scheme (Trustees) Limited is a related party to the Group. The amounts paid to the Group's retirement scheme is set out in Note 33.

### 39. Events after the reporting date

On 5th May 2020, the Group exercised £50m of the accordion option of its banking facilities, thereby increasing the Revolving Credit Facility to £200m and increasing the amount undrawn and available to £70m. This provides the Group with increased committed funding available for the remaining term through to July 2023. In addition to the increased committed funding available, the Adjusted Leverage (defined as net debt over underlying EBITDA) covenant was increased from 3.0x to 3.75x for the next two test dates of 30 June 2020 and 31 December 2020. Following the year-end, on 9 September 2020, the definition of the Adjusted Leverage covenant for the December 2020 covenant test date was amended to be based on two times the six months' EBITDA to December 2020. In addition, the June 2021 covenant was increased to 3.75. The only other financial covenant is Interest Cover. This remains at 4.0x for each test date, but with the December 2020 test based on two times the six months' EBITDA to December 2020. For further details on the Group's current banking facilities please see Note 25.



# Company primary statements

## Company statement of financial position of Ricardo plc as at 30 June

	Note	30 June 2020 £m	30 June 2019 £m
<b>Assets</b>			
<b>Non-current assets</b>			
Intangible assets	3	1.1	0.9
Property, plant and equipment	4	4.7	4.5
Right-of-use assets	5	6.1	-
Investments	6	103.1	103.1
Deferred tax assets	7	2.1	2.1
		<b>117.1</b>	110.6
<b>Current assets</b>			
Trade and other receivables	8	127.3	91.8
Derivative financial assets	13g	3.9	0.3
Cash and cash equivalents		20.3	1.7
		<b>151.5</b>	93.8
<b>Total assets</b>		<b>268.6</b>	204.4
<b>Liabilities</b>			
<b>Current liabilities</b>			
Borrowings	9	(0.7)	(0.1)
Lease liabilities	10	(0.8)	-
Trade and other payables	11	(97.0)	(76.0)
Current tax liabilities		(0.9)	(1.3)
Derivative financial liabilities	13g	(6.5)	(1.2)
Provisions	13d	(0.1)	-
		<b>(106.0)</b>	(78.6)
<b>Net current assets</b>		<b>45.5</b>	15.2
<b>Non-current liabilities</b>			
Borrowings	9	(47.7)	(14.1)
Lease liabilities	10	(6.6)	-
Retirement benefit obligations	13c	(6.7)	(8.5)
Deferred tax liabilities	7	(0.7)	(0.5)
Provisions	13d	-	(0.1)
		<b>(61.7)</b>	(23.2)
<b>Total liabilities</b>		<b>(167.7)</b>	(101.8)
<b>Net assets</b>		<b>100.9</b>	102.6
<b>Equity</b>			
Share capital	13e	13.4	13.4
Share premium	13e	14.3	14.3
Retained earnings		73.2	74.9
<b>Total equity</b>		<b>100.9</b>	102.6

The Ricardo plc company statement of financial position has been prepared in accordance with Financial Reporting Standard 101 *Reduced Disclosure Framework* ('FRS 101'). The notes on pages 193 to 197 form an integral part of these financial statements.

The Company has not presented its own Income Statement and Statement of Comprehensive Income as permitted by Section 408 of the Companies Act 2006. The Company's profit for the year was £11.8m (2019: £10.7m). The financial statements of Ricardo plc (registered number 222915) on pages 192 to 197 were approved by the Board of Directors on 9 September 2020 and signed on its behalf by:

**Dave Shemmans**  
Chief Executive Officer



**Ian Gibson**  
Chief Financial Officer



## Company statement of changes in equity of Ricardo plc for the year ended 30 June

	Share capital	Share premium	Retained earnings	Total
	£m	£m	£m	£m
At 1 July 2018	13.4	14.3	81.5	109.2
Profit for the year	-	-	10.7	10.7
Other comprehensive loss for the year	-	-	(6.4)	(6.4)
Total comprehensive income for the year	-	-	4.3	4.3
Equity-settled transactions	-	-	1.0	1.0
Purchases of own shares to settle awards	-	-	(0.9)	(0.9)
Ordinary share dividends	-	-	(11.0)	(11.0)
At 30 June 2019	13.4	14.3	74.9	102.6
Adoption of IFRS 16 (net of tax) (Note 2)	-	-	(0.3)	(0.3)
At 1 July 2019 (adjusted)	<b>13.4</b>	<b>14.3</b>	<b>74.6</b>	<b>102.3</b>
Profit for the year	-	-	11.8	11.8
Other comprehensive loss for the year	-	-	(1.7)	(1.7)
Total comprehensive income for the year	-	-	10.1	10.1
Equity-settled transactions	-	-	0.6	0.6
Purchases of own shares to settle awards	-	-	(0.6)	(0.6)
Ordinary share dividends	-	-	(11.5)	(11.5)
<b>At 30 June 2020</b>	<b>13.4</b>	<b>14.3</b>	<b>73.2</b>	<b>100.9</b>

# Company notes to the financial statements of Ricardo plc

## 1. Principal accounting policies

### Basis of preparation

The financial statements of Ricardo plc have been prepared on a going concern basis, as discussed in the viability statement on pages 40 and 41, and in accordance with the UK Companies Act 2006 and FRS 101. The Company has transitioned from EU adopted IFRS to FRS 101, which has had no effect on either the financial position nor the financial performance of the Company. The accounting policies set out below have been applied consistently to all periods presented in these financial statements. The following exemptions available under FRS 101 have been applied:

- Paragraphs 45(b) and 46 to 52 of IFRS 2 *Share-based Payment* (details of the number and weighted average exercise prices of share options and how the fair value of goods and services received was determined).
- IFRS 7 *Financial Instruments: Disclosures*.
- Paragraphs 91 to 99 of IFRS 13 *Fair Value Measurement* (disclosure of valuation techniques and inputs used for fair value measurement of assets and liabilities).
- Paragraph 38 of IAS 1 *Presentation of Financial Statements* to present comparative information in respect of:
  - paragraph 73(e) of IAS 16 *Property, Plant and Equipment*; and
  - paragraph 118(e) of IAS 38 *Intangible Assets*.
- The following paragraphs of IAS 1 *Presentation of financial statements*:
  - 10(d) (statement of cash flows);
  - 16 (statement of compliance with all IFRS);
  - 38(a) (requirement for minimum of two primary statements, including cash flow statements);
  - 38(b)-(d) (additional comparative information);
  - 111 (cash flow statement information); and
  - 134-136 (capital management disclosures).
- IAS 7 *Statement of Cash Flows* (The Company has not published its individual cash flow statement as its liquidity, solvency and financial adaptability are dependent on the Group rather than its own cash flows).
- Paragraphs 30 and 31 of IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* (requirement for the disclosure of information when an entity has not applied a new IFRS that has been issued and is not yet effective).
- Paragraph 17 of IAS 24 *Related Party Disclosures* (key management compensation) and the requirements of IAS 24 *Related Party Disclosures* to disclose related party transactions entered into between two or more members of the Group, provided that any subsidiary which is party to the transaction is wholly-owned by such a member.

## 1. Principal accounting policies (continued)

### Significant accounting policies

The significant accounting policies applied in the preparation of these individual financial statements are set out below. These policies have been applied consistently to all the years presented, unless otherwise stated.

#### Investments

Investments in subsidiaries are stated at cost less any impairment in value. The Company evaluates the carrying value of investments at the end of each financial year to determine if there has been an impairment in value, which would result in the inability to recover the carrying amount. When it is determined that the carrying value exceeds the recoverable amount, the excess is written-off to comprehensive income.

#### Amounts owed by subsidiary undertakings

The majority of the Company's financial assets are amounts owed by subsidiary undertakings. These are measured initially at fair value, and subsequently at amortised cost. The general approach is applied to the impairment of financial assets, recognising a loss allowance for expected credit losses ('ECL'). Where the credit risk has not increased significantly since initial recognition the loss allowance are measured as 12-month ECL. For balances repayable on demand, or where the credit risk has increased significantly since initial recognition, a lifetime ECL is measured. ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the company expects to receive, therefore considering future expectations). ECLs are discounted at the effective interest rate of the financial asset.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating ECL, the Company considers the available cash and cash equivalents within the subsidiary, the net current assets of the undertaking and future cash generation.

Assets are provided in full and subsequently written off when there is no reasonable expectation of recovery. Indicators that there may be no reasonable expectation of recovery could include, amongst others, evidence that the subsidiary has entered liquidation proceedings, or no reasonable expectation that sufficient future cash generation to repay the loan will occur in the subsidiary undertaking.

#### Other significant accounting policies

Other significant accounting policies are consistent with the Group financial statements.

#### Judgements in applying accounting policies and key sources of estimation uncertainties

The preparation of financial statements under FRS 101 requires the Company's management to make judgements and estimates that affect the application of accounting policies and the reported amounts of assets, liabilities, revenues and costs. These judgements and estimates are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. The key area of judgment that has the most significant effect on the amounts recognised in the financial statements is the review of financial assets for impairment. Management has applied judgement when determining the credit risk of fellow Group undertakings and their ability to repay loans.

An area involving significant risk of a material adjustment to the carrying amounts of assets and liabilities due to estimate uncertainty within the next financial year is the Company's defined benefit obligation. This risk is the same as that of the Group and is explained in Note 1(c) to the Group financial statements. Another area of estimation uncertainty is management's assessment of the Company's investments to determine whether an indicator of impairment exists. Where applicable, management then evaluates the carrying value of investments against their value-in-use to determine whether if there has been an impairment in value, which would result in the inability to recover the carrying amount.

The value-in-use is estimated using a discounted cash flow valuation. A pre-tax discount rate is used to discount the cash flows, which are derived from externally sourced data reflecting the current market assessment of these investments.

The basis for the projected cash flows is the Group's three-year plan, which is prepared by management and reviewed and approved by the Board. The plan reflects past experience and management's assessment of the current contract portfolio, contract wins, contract retention, price increases, and gross margin, as well as future expected market trends. Cash flows after the three-year plan are projected into perpetuity using a growth rate based on inflation and an average long-term economic growth rate for the territory.

### Changes in accounting policies

IFRS 16 *Leases* became effective on 1 July 2019 as described in Note 1(n) and Note 2 to the Group financial statements. The impact on the Company accounts is disclosed in Note 2 below. Several other standards, interpretations and amendments to existing standards became effective on 1 January 2019, as detailed in Note 1(z) to the Group accounts, none of which had a material impact on the Company.

## 2. Changes in significant accounting policy

The Company followed the Group accounting policy regarding IFRS 16 *Leases*. Please see Note 1(n) to the Group financial statements for the transition method. The transition impact is shown below:

Adoption of IFRS 16 as at 1 July 2019	Previously reported	IFRS 16 transitional adjustment	Adjusted under IFRS 16
	£m	£m	£m
<b>Assets</b>			
<b>Non-current assets</b>			
Right-of-use assets	-	6.6	6.6
Deferred tax assets	2.1	0.1	2.2
<b>Total non-current assets</b>	<b>110.6</b>	<b>6.7</b>	<b>117.3</b>
<b>Current assets</b>			
Trade and other receivables	91.8	(0.2)	91.6
<b>Total current assets</b>	<b>93.8</b>	<b>(0.2)</b>	<b>93.6</b>
<b>Total assets</b>	<b>204.4</b>	<b>6.5</b>	<b>210.9</b>
<b>Liabilities</b>			
<b>Current liabilities</b>			
Lease liabilities	-	(0.8)	(0.8)
Trade and other payables	(76.0)	1.1	(74.9)
<b>Total current liabilities</b>	<b>(78.6)</b>	<b>0.3</b>	<b>(78.3)</b>
<b>Net current assets</b>	<b>15.2</b>	<b>0.3</b>	<b>15.5</b>
<b>Non-current liabilities</b>			
Lease liabilities	-	(7.1)	(7.1)
<b>Total non-current liabilities</b>	<b>(23.2)</b>	<b>(7.1)</b>	<b>(30.3)</b>
<b>Total liabilities</b>	<b>(101.8)</b>	<b>(6.8)</b>	<b>(108.6)</b>
<b>Net assets</b>	<b>102.6</b>	<b>(0.3)</b>	<b>102.3</b>
<b>Equity</b>			
Retained earnings	74.9	(0.3)	74.6
<b>Total equity</b>	<b>102.6</b>	<b>(0.3)</b>	<b>102.3</b>

The lessee's incremental borrowing rate applied to lease liabilities recognised in the statement of financial position at the date of initial application is 4.6% for property.

## 2. Changes in significant accounting policy (continued)

### Reconciliation between operating lease commitments and lease liabilities

The following table explains the differences between the operating lease commitments disclosed applying IAS 17 at 30 June 2019 and the lease liabilities recognised on transition to IFRS 16 on 1 July 2019.

	£m
Total operating lease commitments under IAS 17 at 30 June 2019	10.6
Discounting	(2.8)
Lease liabilities recognised on transition to IFRS 16 at 1 July 2019	7.8

## 3. Intangible assets

	Software £m
<b>Cost</b>	
At 1 July 2019	8.9
Additions	0.6
<b>At 30 June 2020</b>	<b>9.5</b>
<b>Accumulated amortisation</b>	
At 1 July 2019	8.0
Charge for the year	0.4
<b>At 30 June 2020</b>	<b>8.4</b>
<b>Net book value</b>	
<b>At 30 June 2020</b>	<b>1.1</b>
At 30 June 2019	0.9

Software includes £0.7m (2019: £0.4m) in respect of assets under construction which are not being amortised until the assets are made available for use.

## 4. Property, plant and equipment

	Fixture, Land and fittings and property equipment		Total £m
	£m	£m	
<b>Cost</b>			
At 1 July 2019	6.7	1.0	7.7
Additions	-	0.4	0.4
<b>At 30 June 2020</b>	<b>6.7</b>	<b>1.4</b>	<b>8.1</b>
Accumulated amortisation			
At 1 July 2019	2.7	0.5	3.2
Charge for the year	0.1	0.1	0.2
<b>At 30 June 2020</b>	<b>2.8</b>	<b>0.6</b>	<b>3.4</b>
<b>Net book value</b>			
<b>At 30 June 2020</b>	<b>3.9</b>	<b>0.8</b>	<b>4.7</b>
At 30 June 2019	4.0	0.5	4.5

A contingent liability of up to £2.8m which is associated with a guarantee provided to the Ricardo Group Pension Fund in July 2013 is secured on specific land and buildings. Further detail is given in Note 36 to the Group financial statements. Fixture, fittings and equipment includes £0.6m (2019: £0.3m) in respect of assets under construction which are not being depreciated until the assets are made available for use.

## 5. Leases

### (a) As a lessee

The company leases one office premises and technical centre, with a remaining lease term of 13 years. The lease agreement does not impose any covenants. The leased asset may not be used as security for borrowing purposes.

### Right-of-use assets

	Property £m
<b>Cost</b>	
At 30 June 2019	-
Adoption of IFRS 16 (Note 2)	7.6
At 1 July 2019	7.6
<b>At 30 June 2020</b>	<b>7.6</b>
<b>Accumulated depreciation</b>	
At 30 June 2019	-
Adoption of IFRS 16 (Note 2)	1.0
At 1 July 2019	1.0
Charge for the period	0.5
<b>At 30 June 2020</b>	<b>1.5</b>
<b>Net book value</b>	
<b>At 30 June 2020</b>	<b>6.1</b>
At 30 June 2019	-

See Note 10 for details of the associated lease liabilities.

### (b) As a lessor

The Company subleases part of its right of use property with a remaining term of six years. This lease is classified as an operating lease.

During the year the Company recognised rental income of £0.2m (2019: £nil) on these subleases.

The following table sets out a maturity analysis of lease payments, showing the undiscounted lease payments to be received after the reporting date.

	2020 £m
Lease commitments	
By due date of commitments	
Within one year	0.4
Between one and five years	1.6
After five years	0.3
<b>At 30 June</b>	<b>2.3</b>

## 6. Investments

	Shares in subsidiaries £m
<b>At 1 July 2019 and 30 June 2020</b>	<b>103.1</b>

The Directors consider that the fair value of investments is not less than the carrying value. Details of the Company's subsidiaries and related undertakings are shown in Note 37 to the Group financial statements.



## 7. Deferred tax

	2020	2019
	£m	£m
Recognised deferred tax assets/(liabilities)		
At 1 July (previously reported)	1.6	1.1
Adoption of IFRS 16 (Note 2)	0.1	-
At 1 July (restated)	1.7	1.1
Charged to the income statement	(1.4)	(0.9)
Credited to other comprehensive income	1.1	1.4
<b>At 30 June</b>	<b>1.4</b>	<b>1.6</b>

	2020	2019
	£m	£m
Deferred tax assets/(liabilities) comprise		
Accelerated capital allowances	(0.2)	(0.1)
Defined benefit obligation	1.3	1.4
Tax losses and credits	0.1	0.2
Unrealised capital gains	(0.5)	(0.5)
Other	0.7	0.6
<b>At 30 June</b>	<b>1.4</b>	<b>1.6</b>

	2020	2019
	£m	£m
Non-current		
Assets	2.1	2.1
Liabilities	(0.7)	(0.5)
<b>At 30 June</b>	<b>1.4</b>	<b>1.6</b>

## 8. Trade and other receivables

	2020	2019
	£m	£m
Trade receivables	0.1	-
Amounts owed by subsidiaries	124.8	90.0
Prepayments	1.2	0.9
Other receivables	1.2	0.9
<b>At 30 June</b>	<b>127.3</b>	<b>91.8</b>

All trade and other receivables are due within the next 12 months. £11.1m (2019: £8.2m) of the amounts owed by subsidiaries are due for repayment within the next 12 months and the remaining £113.9m (2019: £81.8m) have no fixed repayment date. £102.7m (2019: £70.5m) of the amounts owed by subsidiaries carry interest at rates between 2.0% and 5.0% (2019: 2.3% and 5.0%) with the remaining £22.3m (2019: £19.5m) being interest-free. All amounts owed by subsidiaries are unsecured.

## 9. Borrowings

	2020	2019
	£m	£m
Current liabilities - borrowings:		
- Bank overdrafts repayable on demand	0.7	0.1
Total	0.7	0.1
Non-current liabilities - borrowings:		
- Bank loans maturing after one year	47.7	14.1
Total	47.7	14.1
<b>At 30 June</b>	<b>48.4</b>	<b>14.2</b>

The Company has the same banking facilities as the Group. Please see Note 25 to the Group financial statements.

## 10. Lease liabilities

	Total
	£m
Movement in lease liability	
At 30 June 2019	-
Adoption of IFRS 16 (Note 2)	7.9
At 1 July 2019	7.9
Interest	0.3
Payments	(0.8)
<b>At 30 June 2020</b>	<b>7.4</b>

	£m
Lease liability	
Current liabilities - maturing within one year	0.8
Non-current liabilities - maturing after one year	6.6
<b>At 30 June 2020</b>	<b>7.4</b>

	£m
Maturity of undiscounted lease liability	
Within one year	0.8
Between one and five years	3.2
After five years	5.6
Finance portion of net liability	(2.2)
<b>At 30 June 2020</b>	<b>7.4</b>

## 11. Trade and other payables

	2020	2019
	£m	£m
Trade payables	0.6	0.4
Tax and social security payable	0.2	0.3
Amounts owed to subsidiaries	95.2	71.1
Accruals	-	3.0
Other payables	1.0	1.2
<b>At 30 June</b>	<b>97.0</b>	<b>76.0</b>

All amounts owed to Group undertakings are unsecured. £86.9m (2019: £64.4m) of the amounts owed to subsidiaries carry interest at rates between 2.0% and 3.1% (2019: 2.4% and 2.5%) and has no fixed repayment date. £8.2m (2019: £6.7m) of the amounts owed to subsidiaries are interest-free and due for repayment within the next 12 months.

## 12. Lease commitments

At 30 June 2019 the Group's future aggregate undiscounted minimum lease payments under non-cancellable operating leases not recognised on the consolidated statement of financial position are as follows:

	2019
	£m
Lease commitments	
By due date of commitments	
Within one year	0.8
Between one and five years	3.2
After five years	6.6
<b>At 30 June</b>	<b>10.6</b>

From 1 July 2019, the group has recognised right-of-use assets for these leases. See Note 2 for details.

### 13. Other information

#### a) Company audit fee

Fees payable to the Company's auditor for the audit of the Company's annual accounts totalled £0.3m (2019: £0.2m). Fees payable to KPMG LLP and its associates for non-audit services to the Company are not required to be disclosed because the Group accounts disclose such fees on a consolidated basis (see Note 11 to the Group financial statements).

#### b) Director's emoluments

The remuneration received by all Executive and Non-Executive Directors during the year is disclosed in the Directors' Remuneration Report on page 102. The Directors are remunerated by the Company for their services to the Group as a whole. No remuneration was paid to them specifically in respect of their services to Ricardo Plc for either year.

#### c) Employees and defined benefit obligation

During the year the company employed an average of 51 (2019: 47) employees.

The Company operates a defined benefit pension scheme, the Ricardo Group Pension Fund ('RGPF'). This is disclosed in Note 33 to the Group financial statements, together with the accounting policy and key accounting estimates.

#### d) Provisions

The Company has a provision within current liabilities for expected costs of legal claims and litigation of £0.1m (2019: non-current liabilities of £0.1m).

#### e) Share capital and share premium

Since 1 July 2018, the number of allocated, called-up and fully paid ordinary shares of 25p each remained at 53,406,250, being £13.4m. Share premium has remained £14.3m over the same period.

#### f) Contingent liabilities

Contingent liabilities exist in the form of guarantees provided in the ordinary course of business to certain subsidiaries to give assurance of their contractual and financial commitments. None of these arrangements are expected to give rise to any material cost to the Company.

In July 2013, a guarantee was provided to the Ricardo Group Pension Fund ('RGPF') of £2.8m in respect of certain contingent liabilities that may arise, which have been secured on specific land and buildings. The outcome of this matter is not expected to give rise to any material cost to the Group. In October 2018, a further guarantee was provided to the RGPF for an amount that shall not exceed the employers' liability were a debt to arise under Section 75 of the Pensions Act 1995. The guarantee will terminate on 5 April 2023. The outcome of this matter is not expected to give rise to any material cost to the Group on the basis that the Group continues as a going concern.

#### g) Derivative financial assets and liabilities

The Company has the same derivative financial assets and liabilities as the Group. These are disclosed in Note 26 to the Group financial statements.

#### h) Related party transactions

The Company has taken the exception under FRS 101 not to disclose related party transactions entered into between two or more members of the Group, nor to disclose key management compensation. Directors emoluments are detailed in Note 13(b).





# Additional information

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# Corporate Information

## Group General Counsel and Company Secretary

Patricia Ryan

## Registered office

Ricardo plc  
Shoreham Technical Centre  
Shoreham-by-Sea  
West Sussex  
BN43 5FG

## Registered company number

222915

## Registrars

Link Asset Services  
The Registry  
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Beckenham  
Kent  
BR3 4TU

## Independent auditors

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15 Canada Square  
London  
E14 5GL

## Stockbrokers

Investec Investment Banking  
2 Gresham Street  
London  
EC2V 7QP  
Tel: 0207 597 5000

Liberum Capital Limited  
Ropemaker Place  
25 Ropemaker Street  
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EC2Y 9LY  
Tel: 0203 100 2000

**Website:** [www.ricardo.com](http://www.ricardo.com)

A PDF version of this Annual Report & Accounts can be downloaded from the Investors page of our website.

## Key dates

Annual General Meeting: 12 November 2020

## Shareholder services

Link Asset Services provide a share portal service, which allows shareholders to access a variety of services online, including: viewing shareholdings; buying and selling shares online; registering change of address details; and bank mandates to have dividends paid directly into your bank account. Any shareholder who wishes to register with Link Asset Services to take advantage of this service should visit [www.linkassetservices.com/shareholders](http://www.linkassetservices.com/shareholders).

## Shareholder enquiries

Tel: 0870 162 3131 (from the UK)  
Tel: +44 208 639 3131 (from outside the UK)

## Principal bankers

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3rd Floor  
10 Gresham Street  
London  
EC2V 7AE

HSBC Bank plc  
First Point  
Buckingham Gate  
London Gatwick Airport  
West Sussex  
RH16 0NT

## Financial advisors

NM Rothschild & Sons  
New Court  
St Swithin's Lane  
London  
EC4P 4DU

# Glossary

Term	
B-BBEE legislation	South African employment legislation – Broad-based Black Economic Empowerment
Cash conversion	Statutory cash conversion is calculated as cash generated from operations divided by earnings before interest, tax, depreciation and amortisation ('EBITDA').
Constant currency organic growth/decline	The Group generates revenues and profits in various territories and currencies because of its international footprint. Those results are translated on consolidation at the foreign exchange rates prevailing at the time. Constant currency organic growth/decline is calculated by translating the result for the current year using foreign currency exchange rates applicable to the prior year. This provides an indication of the growth/decline of the business, excluding the impact of foreign exchange.
DTC	Detroit Technology Campus
EBITDA	Earnings before interest, tax, depreciation and amortisation
ESG	Environmental, Social and Governance
FY	Financial Year
GHG	Greenhouse gases
Headcount	Headcount is calculated as the number of employees on the payroll at the reporting date and includes subcontractors on a full-time equivalent basis.
ISO 9001	International standard for Quality Management Systems
ISO 14001	International standard for Environmental Management Systems
ISO 27001	International standard for Information Security Management Systems
ISO 45001	International standard for Occupational Health and Safety Management Systems
Net debt	Net debt is defined as current and non-current borrowings less cash and cash equivalents, including hire purchase agreements, but excluding IFRS 16 lease liabilities. Management believes this definition is the most appropriate for monitoring the indebtedness of the Group and is consistent with the treatment in the Group's banking agreements.
Organic growth/decline	Organic growth/decline is calculated as the decline in the result for the current year compared to the prior year, after adjusting for the performance of acquisitions or disposals, to include the results of those acquisitions for an equivalent period in each financial year.
Organic result	The organic result for the prior year includes the performance of acquisitions for an equivalent period to FY 2019/20.
REEP	Ricardo Energy, Environment and Planning, formerly PLC Consulting Pty Ltd, acquired 31 July 2019
RRA	Ricardo Rail Australia, formerly Transport Engineering Pty Ltd, acquired 31 May 2019
Scope 1 Emissions	Direct emissions from owned or controlled sources
Scope 2 Emissions	Indirect emissions from the generation of purchased energy.
Scope 3 Emissions	All indirect emissions (not included in scope 2) that occur in the value chain, including both upstream and downstream emissions.
TCFD	Task Force on Climate-Related Financial Disclosures: An organization of 31 members aiming to develop guidelines for voluntary climate-centered financial disclosures across industries
Underlying	Underlying measures exclude the impact on statutory measures of specific adjusting items. Underlying measures are considered to provide a more useful indication of underlying performance and trends over time.
Underlying cash conversion	Underlying cash conversion is calculated as cash generated from operations, adjusted for the impact of specific adjusting items on operating cash, divided by EBITDA, adjusted for the cash impact of specific adjusting items.



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