

Delivering Excellence Through  
Innovation & Technology



# Ricardo plc Preliminary Results Presentation

Year ended 30 June 2018  
Presented September 2018

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# HIGHLIGHTS – for the year ended 30 June 2018

- Record order intake at £413m, up £47m on FY 2016/17
- Record year-end order book at £288m, up £40m on June 2017
- Revenue up 8% to £380.0m
- Underlying PBT up 2% to £39.0m on FY 2016/17
- Strong performance in Asia and EV order intake, with a good mix of orders across our market sectors
- Acquisition of Control Point to enhance US defence business
- Disposals of Chicago and Southern Germany engine test facilities, to balance asset mix with the trend towards electrification
- Order flow disruption in the second half and the close out of some challenging projects impacted performance in our UK Automotive business. Changes made and issues swiftly addressed
- Strong working capital management has reduced net debt to £26.1m from £37.9m at June 2017 (after £6m acquisition of Control Point)
- Outlook is positive with a good pipeline – dividend increased by 6% to 20.46p from 19.30p



# Key indicators



	Year ended 30 June 2018	Year ended 30 June 2017	Year-on-Year Movement
Order intake (£m)	£413m	£366m	£47m
Order book (£m)	£288m	£248m	£40m
Operating profit margin <sup>(1)</sup> (%)	10.8%	11.6%	(0.8%)
Underlying effective tax rate <sup>(1) (2) (3)</sup> (%)	21.3%	23.0%	(1.7%)
Basic earnings per share (pence) <sup>(1) (2)</sup>	57.3p	55.7p	1.6p
Full year dividend (pence)	20.46p	19.30p	1.16p
Net (debt)/funds (£m)	£(26.1)m	£(37.9)m	£11.8m
FCFe <sup>(4)</sup>	£26.0m	£9.9m	£16.1m
Pre-tax pension deficit (£m)	£4.6m	£22.2m	£(17.6m)
Closing headcount incl. subcontractors (no.)	3,061	2,927	134

(1) excluding specific adjusting items, which comprise amortisation of acquired intangible assets, acquisition-related expenditure and reorganisation costs.

(2) in the current period, a non-recurring tax charge arising from the de-recognition of related deferred tax assets was also classified as a specific adjusting item.

(3) reported effective tax rate is 33.7%.

(4) calculated as net cashflow excluding dividends, FX, proceeds from share issue and acquisition and restructuring related costs

£m	Year ended 30 June		Year-on-Year Movement
	2018 Underlying <sup>(1)</sup>	2017 Underlying <sup>(1)</sup>	% change
Revenue	380.0	352.1	8%
Gross profit	138.9	132.9	5%
Administration costs	(97.7)	(92.1)	6%
Operating profit	41.2	40.8	1%
Net finance costs	(2.2)	(2.5)	(12)%
<b>Profit before tax</b>	<b>39.0</b>	<b>38.3</b>	<b>2%</b>
Taxation charge <sup>(2)</sup>	(8.3)	(8.8)	(6)%
<b>Profit for the year</b>	<b>30.7</b>	<b>29.5</b>	<b>4%</b>

(1) excluding specific adjusting items, which comprise amortisation of acquired intangible assets, acquisition-related expenditure and reorganisation costs.

(2) in the current period, a non-recurring tax charge arising from the de-recognition of related deferred tax assets was also classified as a specific adjusting item. A full income statement including these items is included in the Appendix.

# Revenue by customer location



External Revenue	Year ended 30 June	Year ended 30 June
£m	2018	2017
UK	144.9	144.5
Rest of Europe	99.3	93.3
<b>Europe total</b>	<b>244.2</b>	<b>237.8</b>
<b>US</b>	<b>47.6</b>	<b>38.6</b>
China	39.3	32.7
Japan	25.7	16.3
Rest of Asia	15.9	17.9
<b>Asia total</b>	<b>80.9</b>	<b>66.9</b>
Rest of the World	7.3	8.8
<b>Total</b>	<b>380.0</b>	<b>352.1</b>

# Segmental results



£m	Full year ended 30 June					
	Revenue earned		Underlying operating profit <sup>(1)</sup>		Underlying operating profit <sup>(1)</sup> margin	
	2018	2017	2018	2017	2018	2017
Technical Consulting	288.3	280.5	31.9	32.8	11.1%	11.7%
Performance Products	91.7	71.6	9.3	8.0	10.1%	11.2%
<b>Total</b>	<b>380.0</b>	<b>352.1</b>	<b>41.2</b>	<b>40.8</b>	<b>10.8%</b>	<b>11.6%</b>

(1) excluding specific adjusting items, which comprise amortisation of acquired intangible assets, acquisition-related expenditure and reorganisation costs.

## Year ended 30 June

£m	2018	2017
Underlying operating profit	41.2	40.8
Depreciation and amortisation	11.6	12.3
Working capital increase	(0.2)	(19.6)
Dividends	(10.5)	(9.8)
Tax paid	(7.6)	(7.6)
Capital expenditure	(14.4)	(11.9)
Pension charge and funding	(4.4)	(4.4)
Cash flow hedges, FX, interest/other	0.1	1.1
<b>Cash inflow before acq'n &amp; restructuring related costs</b>	<b>15.8</b>	<b>0.9</b>
Acquisition and restructuring related costs	(4.0)	(4.4)
<b>Cash inflow/(outflow) <sup>(1)</sup></b>	<b>11.8</b>	<b>(3.5)</b>
Opening Cash Balance	(37.9)	(34.4)
Closing Cash Balance	(26.1)	(37.9)

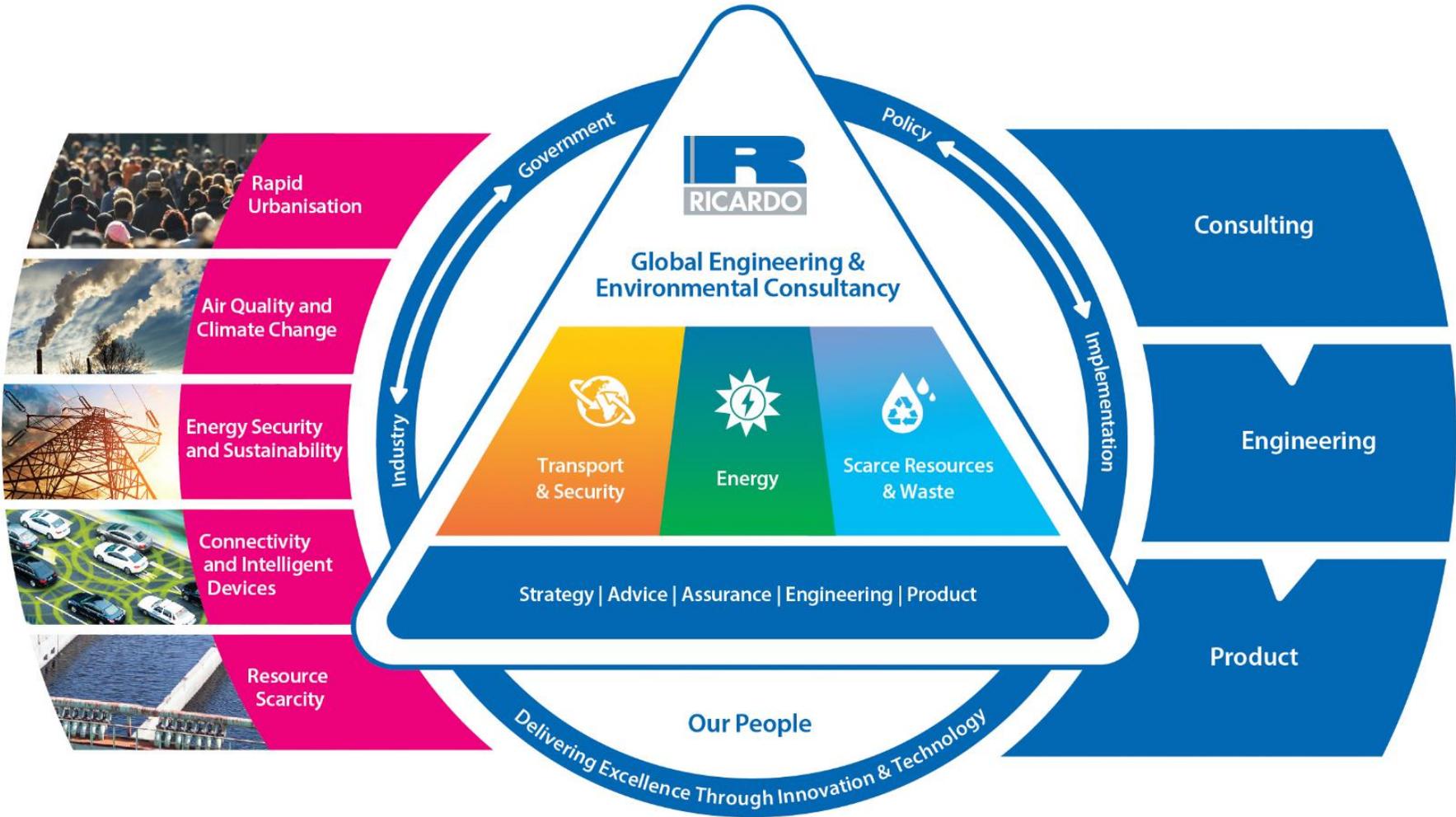
(1) Cash inflow/(outflow) net of movement in borrowings

## Balance sheet summary



£m	30 June 2018	30 June 2017
Tangible non-current assets	45.3	48.0
Intangible non-current assets	97.2	94.4
Inventories, trade and other receivables	155.1	151.5
Assets held for sale	0.0	2.8
Net (debt)/funds	(26.1)	(37.9)
Trade and other payables	(82.5)	(82.1)
Pension deficit	(4.6)	(22.2)
Other	(7.9)	1.2
<b>Net assets</b>	<b>176.5</b>	<b>155.7</b>

# Our strategic mission is to be the world's leading organisation for engineering, technical and environmental consultancy within Transport & Security, Energy, and Scarce Resources & Waste



**3,000+ people**

**85 Nationalities**

**49 Sites**

**21 Countries**

## Market and economic backdrop

- Continued global infrastructure spend particularly in Asia
- Weak diesel market in Europe/UK impacting OEM sales
- Geo-political impacts Brexit/US tariffs creating uncertainty
- Continued increase in demand for EVs and improved efficiency of the combustion engine
- Reduction in CO<sub>2</sub> remains a top global priority
- Debate on plastics recycling and sustainability
- Water as a scarce resource – worldwide drought and increased temperature conditions (Australia, California, Mainland Europe)



# Digitalisation

## ENERGY & ENVIRONMENT

- Advanced data modelling
- UK's largest vehicle emissions monitoring database
- Online policy tools and software
- Strategic network resilience software
- Implementation of new technologies – drone surveying, augmented reality, satellite imagery/data

## RAIL

- Remote condition monitoring
- SmartDrive – energy efficient driver behaviour
- Unmanned, automated railways support
- Resilience to cyber threats through Roke partnership

## PERFORMANCE PRODUCTS

- Technology utilised to reduce time to market and eliminate manufacturing risks
- Advanced digital production modelling and planning tools
- Use of virtual reality to model updates to the engine assembly line

## AUTOMOTIVE

- Greater levels of virtual product development
- Improving communication technologies
- Growing sensors and vehicle functions
- Driver demands for connectivity
- Value of data
- Safety and congestion benefits
- New financial charging systems and offerings

## A busy year for Ricardo customer activity

- Record Group order intake
- A good year for Rail with order growth benefitting from infrastructure spend
- Increased output from Performance Products delivering 4,390 McLaren engines, up from 3,330 in the prior year
- Good global automotive order intake underpinned by strong growth in EV and hybridisation (£85m - 21% of group order intake, 59% of automotive order intake)
- Automotive order intake strong in Mainland Europe/Asia - weak in UK
- Secured initial orders and delivery commenced on ABS
- Similar EE orders to prior year with a growing pipeline and broader activity
- A good number of new large multiyear technical consulting programmes
- Pipeline remains good



# A busy year operationally to ensure the business remains fit for the future



- Control Point acquired and integrated in year to strengthen our US defence business/profile
- Disposals of Chicago and Southern Germany test facilities to improve efficiency and manage capacity in a changing market
- Consolidation of European engineering base and increased use of Prague lower cost base
- Pro-active actions taken to improve performance in the UK Automotive business
- Increased M&A resource and activity with increased bank financing in place to assist with non-organic growth options



# Impact of challenging projects and improvement actions taken in the UK Automotive business



## Background

- Worldwide harmonised light vehicles test procedure (WLTP)
- Calibration projects particularly challenging
- Traditional clients less accommodating to project variations this year as they manage market backdrop and challenges of new emissions legislation
- Some poor performance exhibited internally

## Improvement actions

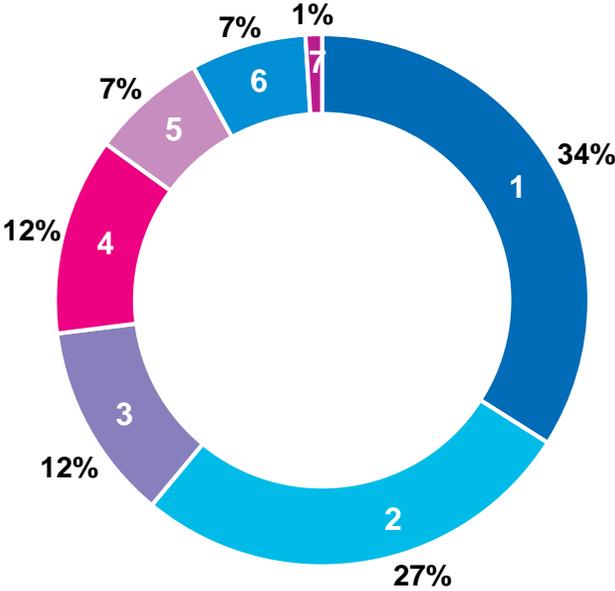
- Change of senior management and headcount reduction
- Independent project management team established
- Increased rigour over contracting scope definition and variation orders
- Improved project management review process



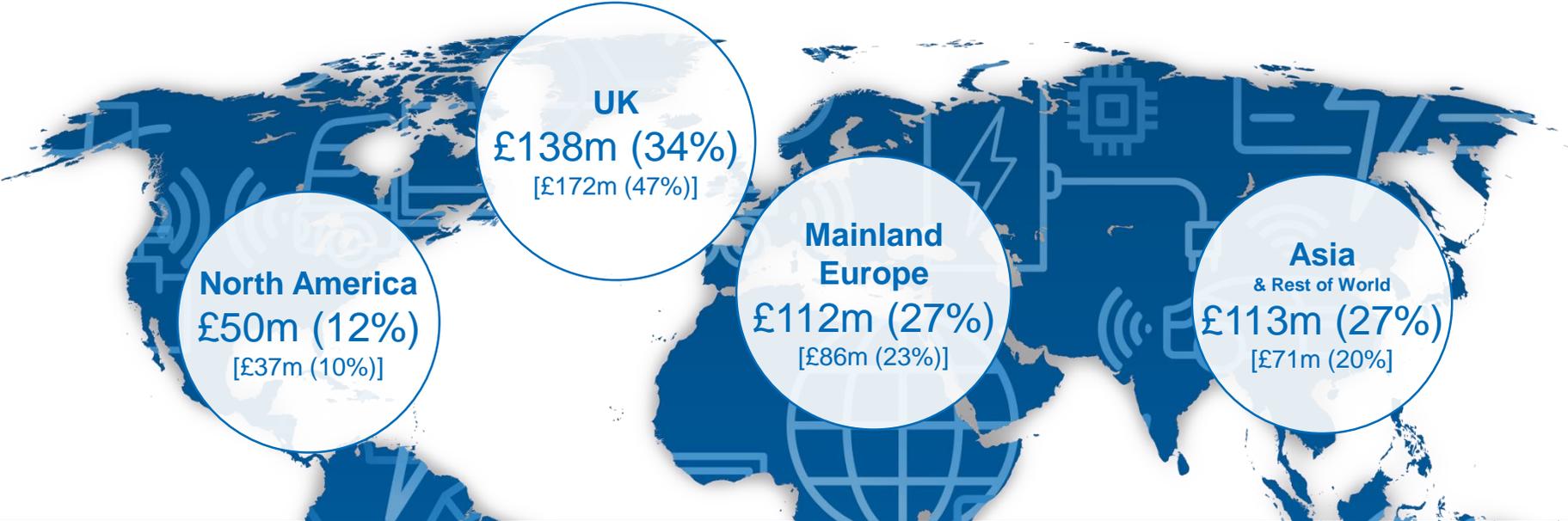
# A continued good balance of order intake and pipeline from across the globe



- 1. UK
- 2. Mainland Europe
- 3. North America
- 4. China
- 5. Japan
- 6. Rest of Asia
- 7. Rest of World



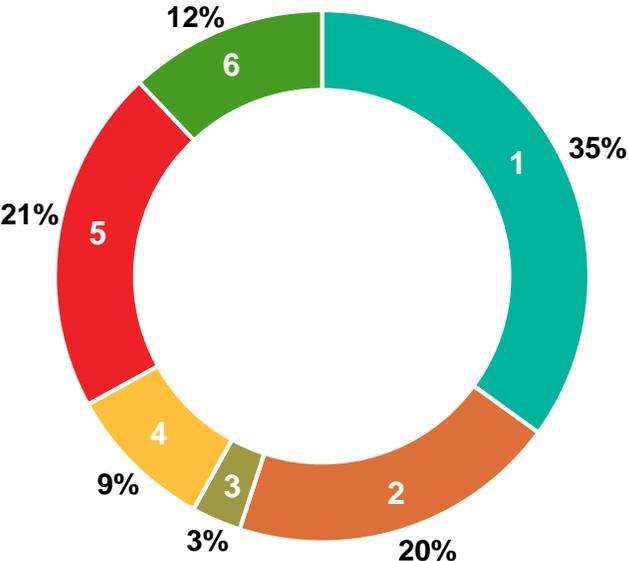
**FY 2017/18**  
 Order Intake £413m  
 [FY 2016/17  
 Order Intake £366m]



# Well balanced market sector order intake with strong performance from Automotive and Rail



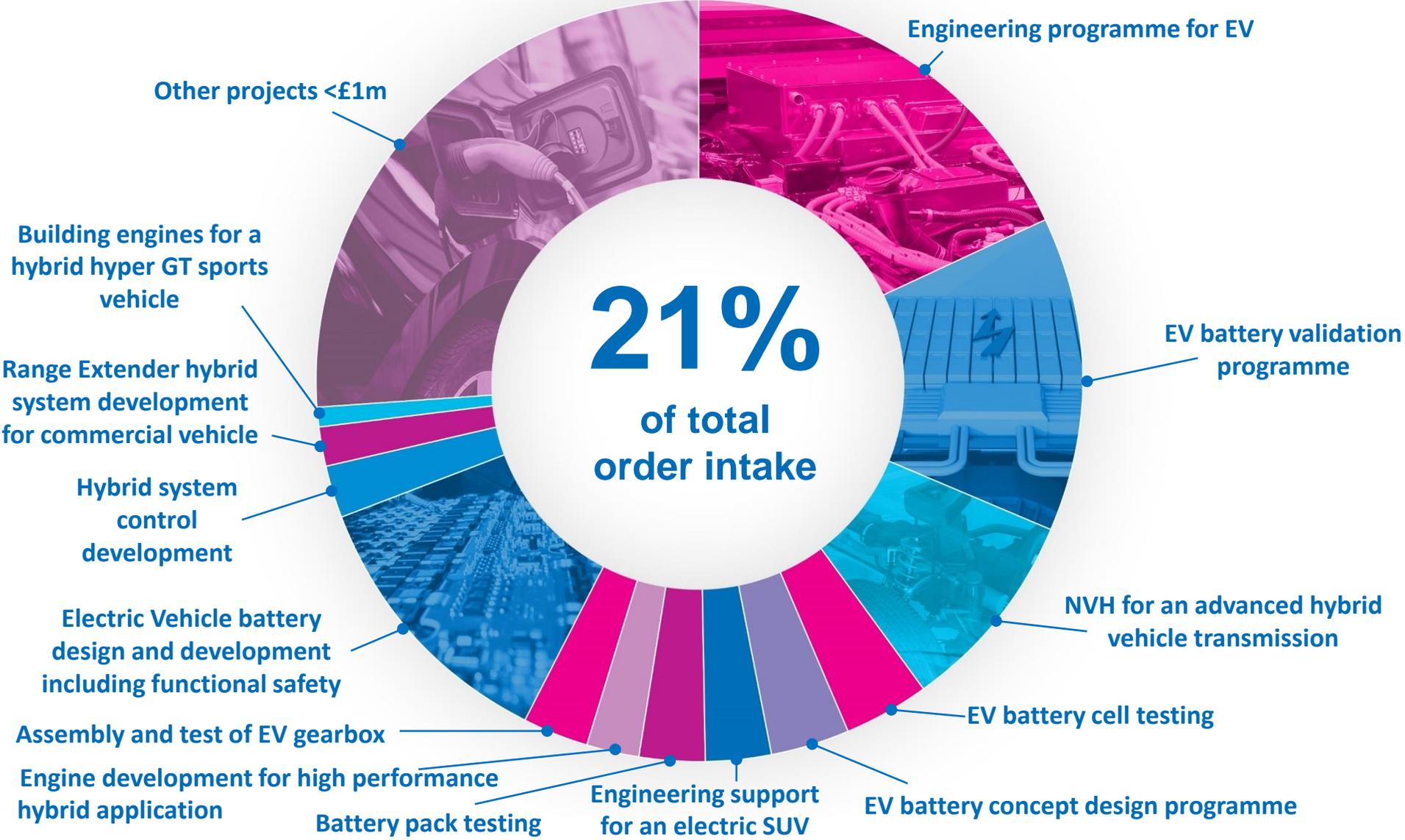
- 1. Automotive
- 2. Rail
- 3. Defence
- 4. Off Highway & Commercial Vehicles
- 5. High Performance Vehicles & Motorsport
- 6. Energy & Environment



**FY 2017/18**  
 Order Intake £413m  
 [FY 2016/17  
 Order Intake £366m]

Automotive	Rail	Defence	Off-Highway & CV	HPV&M	E&E
<b>£144m</b>	<b>£82m</b>	<b>£14m</b>	<b>£37m</b>	<b>£86m</b>	<b>£50m</b>
[£116m]	[£73m]	[£6m]	[£30m]	[£88m]	[£53m]

# Electrification – order intake relating to electric or hybrid vehicles is £85m or 21% of Group order intake

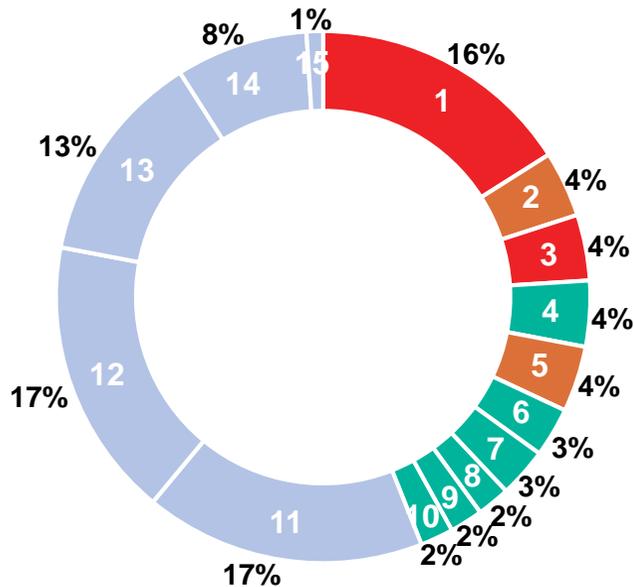


# Diverse customer mix, with a good level of multi-year business

## Our top 4 customers are spread across Performance Products, Rail and Automotive



Ricardo External Order Intake by Customer for year ended 30 June 2018



**FY 2017/18**  
**Order Intake £413m**  
**[FY 2016/17**  
**Order Intake £366m]**



- |                 |                        |                                 |
|-----------------|------------------------|---------------------------------|
| 1. Key Client 1 | 7. Key Client 7        | 13. Other Europe clients        |
| 2. Key Client 2 | 8. Key Client 8        | 14. Other North America clients |
| 3. Key Client 3 | 9. Key Client 9        | 15. Other Rest of World clients |
| 4. Key Client 4 | 10. Key Client 10      |                                 |
| 5. Key Client 5 | 11. Other UK clients   |                                 |
| 6. Key Client 6 | 12. Other Asia clients |                                 |

### Order Book Ageing

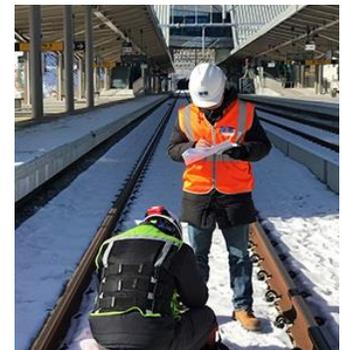


- **Business drivers**

- Urbanisation leading to growth in rail transportation;
- Sector-wide progress towards independent assurance of critical and complex railway systems;
- Capacity constraints leading to brown-field upgrades and modern traffic management systems;
- Minimising unplanned maintenance through clever monitoring and diagnostics.

- **What is our approach?**

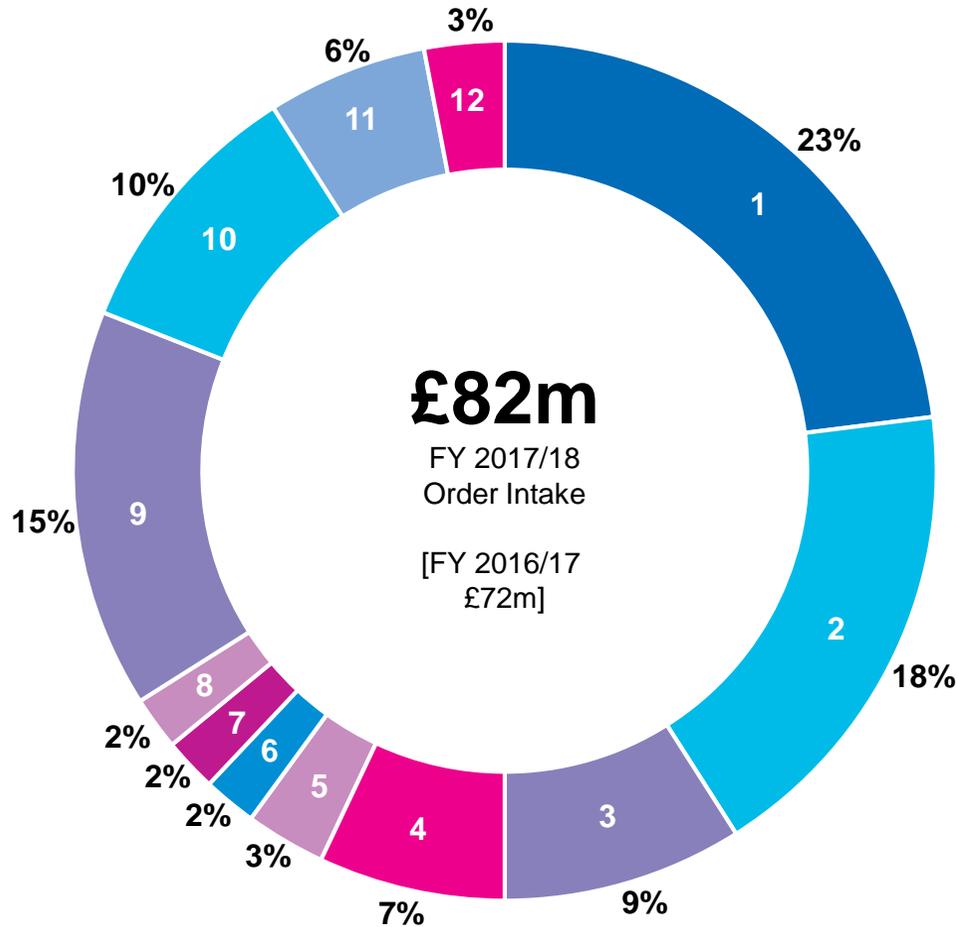
- To enable optimisation of complex and critical railway systems through deep technical and sectoral expertise in the world's railways by:
  - using teams with local domain expertise to solve issues at a local level;
  - possessing a global family of independent assurance businesses accredited in the major railway assurance schemes;
  - optimising management of assets through provision of clever monitoring and management systems.



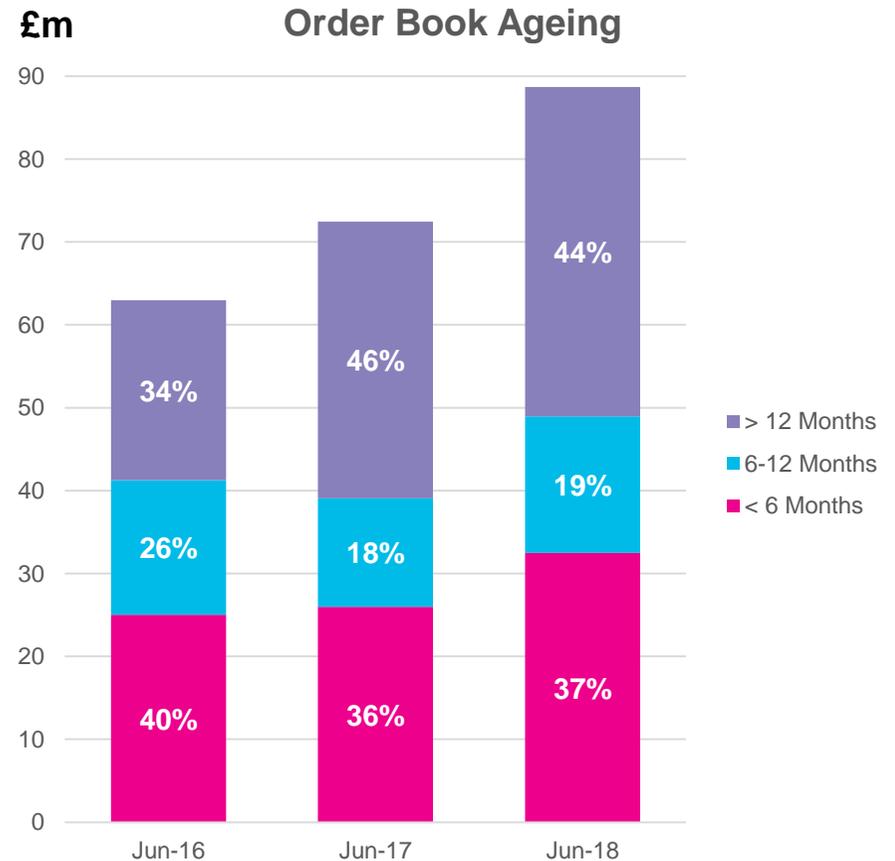
# Focus on Rail – Technical Consulting



- Over 1,100 live projects
- No of people – 580
- Revenue of c. £70m



- |                 |                                 |
|-----------------|---------------------------------|
| 1. Key Client 1 | 7. Key Client 7                 |
| 2. Key Client 2 | 8. Key Client 8                 |
| 3. Key Client 3 | 9. Other Europe clients         |
| 4. Key Client 4 | 10. Other Asia clients          |
| 5. Key Client 5 | 11. Other UK clients            |
| 6. Key Client 6 | 12. Other Rest of World clients |



## Delivering Excellence Through Innovation and Technology

### Amsterdam Metro North-South Line

Ricardo has provided technical support for Amsterdam's new 11km North-South metro line which opened in July 2018. Connecting the city's busy Centraal and Zuid interchanges to its northern residential districts across the River IJ, 9km of the route is underground. Ricardo has worked across various aspects of the project's development since 2009, from infrastructure and traction power supply through to the vehicles' safety systems.

# 평창 Pyeongchang 平昌



Delivering Excellence Through Innovation and Technology

## Pyeongchang High-Speed 'Olympic Line'

Ricardo performed the safety assessments of the Automatic Train Protection system on a 60km section of the new high-speed line from Seoul to Pyeongchang. Completed within a tight timescale and ensuring the signalling technology was fully compliant with technical standards, the line was opened in December 2017 ahead of the 2018 Winter Olympics.





## Delivering Excellence Through Innovation and Technology

### Beijing Maglev

Ricardo has provided the safety assessment for a low-speed maglev urban transit line. The S1 line is the first in the Chinese capital to operate with magnetic levitation, serving a 10km route through the western districts of Shijingshan and Mentougou. Ricardo Rail worked to assure the new line's safety, which required specialist consideration due to the unique characteristics of maglev technology, ahead of its entry into service in December 2017.



## Delivering Excellence Through Innovation and Technology

### SmartDrive

2017 winner of 'Impetus', our internal rail innovation competition, SmartDrive uses specialist software to model route trajectories and identify where certain driving techniques – such as coasting and braking - can reduce energy use. Pilot scheme with Edinburgh Trams suggests potential traction energy reduction of 17% across the network with cost savings of up to £160k per year for the operator.

# Focus on Energy and Environment – Technical Consulting

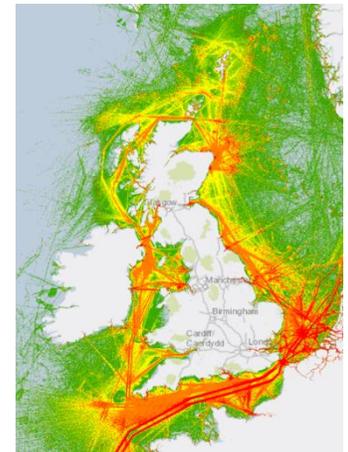


## Business drivers

- Major global challenges of population growth and urbanisation
- Pressing environmental problems of water scarcity, resource availability, air pollution, climate change and energy security
- Chemical risk management and mitigation

## What is our approach?

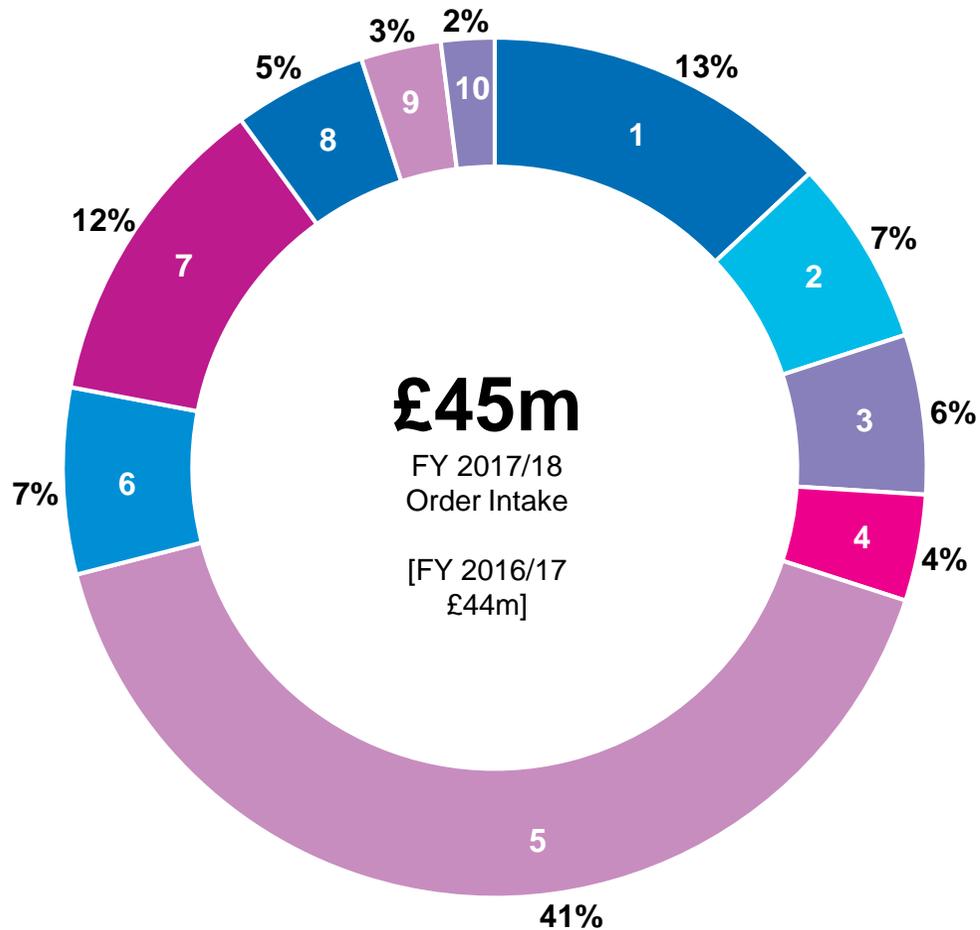
- Providing deep technical and sectoral expertise to solve the world's most significant energy and environmental problems. Specifically:
  - Using our leading edge UK and European experience (scientists, engineers, economists etc) to generate and secure new business internationally
  - Market leading policy assessment, data management, modelling and techno-economic analysis for electromobility, air quality, energy, water, waste and chemical risk
  - Transferring unique technical expertise from one sector to meet emerging needs in other sectors (e.g. applying automotive skills to utility companies)
  - Developing new software and technologies to help address major global energy and environmental challenges



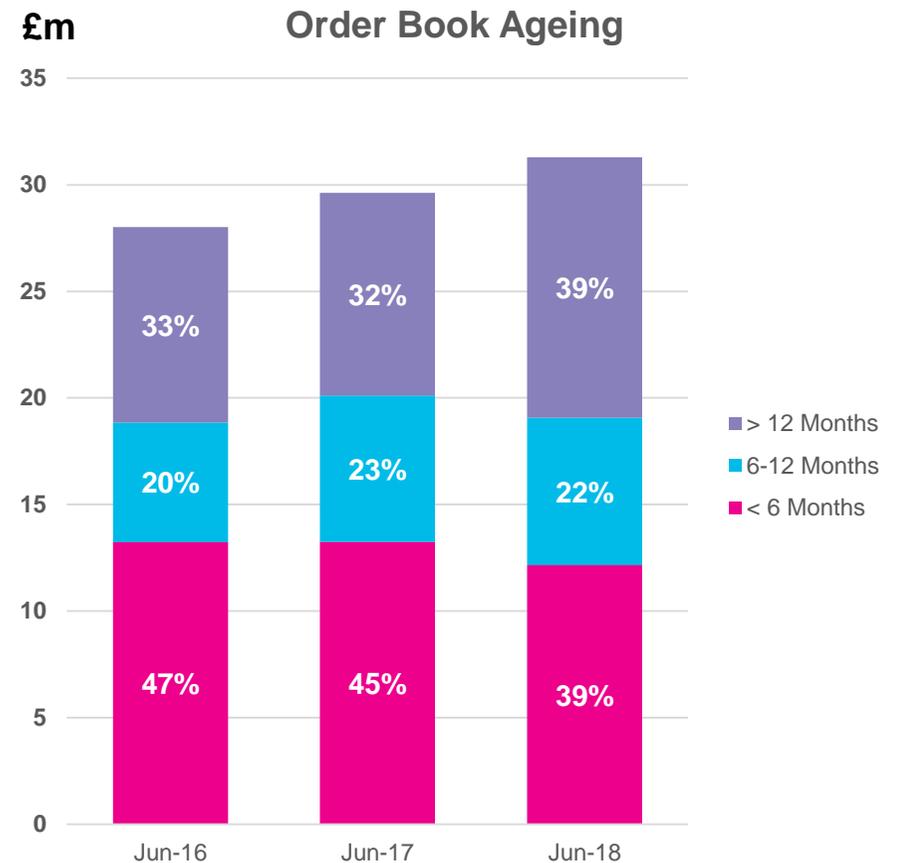
# Focus on Energy and Environment – Technical Consulting



- Over 900 live projects
- No of people – 470
- Revenue of c. £45m



- |                     |                                 |
|---------------------|---------------------------------|
| 1. Key Client 1     | 6. Other UK Gov clients         |
| 2. Key Client 2     | 7. Other Europe clients         |
| 3. Key Client 3     | 8. Other North America clients  |
| 4. Key Client 4     | 9. Other Rest of Asia clients   |
| 5. Other UK clients | 10. Other Rest of World clients |





**Delivering Excellence Through Innovation and Technology**

## **Implementing the Paris Agreement**

Ricardo Energy & Environment is supporting the influential C40 cities network to develop ambitious climate action plans for nine African cities. Ricardo's expertise in the management and mitigation of greenhouse gas emissions, and capacity building for climate action, is crucial to the project. This includes the development of long term climate action plans which support international climate commitments.



**Delivering Excellence Through Innovation and Technology**

## **High-Density Public Charging Network**

Ricardo Energy & Environment is providing support to Pebble Power in the installation of a dense public charging network around Brighton and Hove in order to accelerate the adoption of electric vehicles (EVs). This includes identifying and assessing suitable options for lamp-post EV chargers, solutions for charging electric taxis and assessing the implications of new charging points on the city's power grid infrastructure.

### Delivering Excellence Through Innovation and Technology

## Strengthening industry emission standards in India

Ricardo was tasked by the Shakti Foundation to undertake an in-depth review of the process for setting industry emission standards in India. Industrial pollution is a major contributor to pollution problems in India. Ricardo performed a detailed review of the process, completed global benchmarking, provided recommendations for improvement and presented the findings to government, industry and NGOs.

India Limited  
Cares For Kolkata

# Focus on Automotive – Technical Consulting



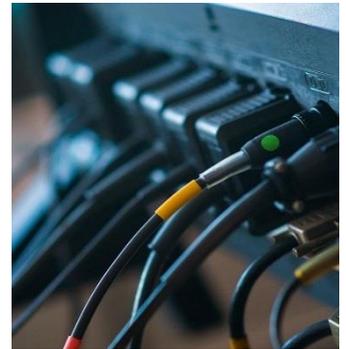
## • Business drivers

- Increased Electric and hybrid vehicle (xEV) development
- New vehicle start ups and Tier 1's (battery solutions, electrical machines etc)
- ICE continues to be part of the future powertrain mix (gasoline hybrid, low emission diesels but reduction in sales of diesel cars impacting on CO2)
- WLTP/RDE emissions standards driving significant OEM calibration and design activity across Europe. Not straight forward and holding up deliveries
- Increase in Automotive industry development without necessarily increased revenues –"need to do more for less" - reduce product development timescales and prototype hardware costs (virtual product development)



## • What is our approach?

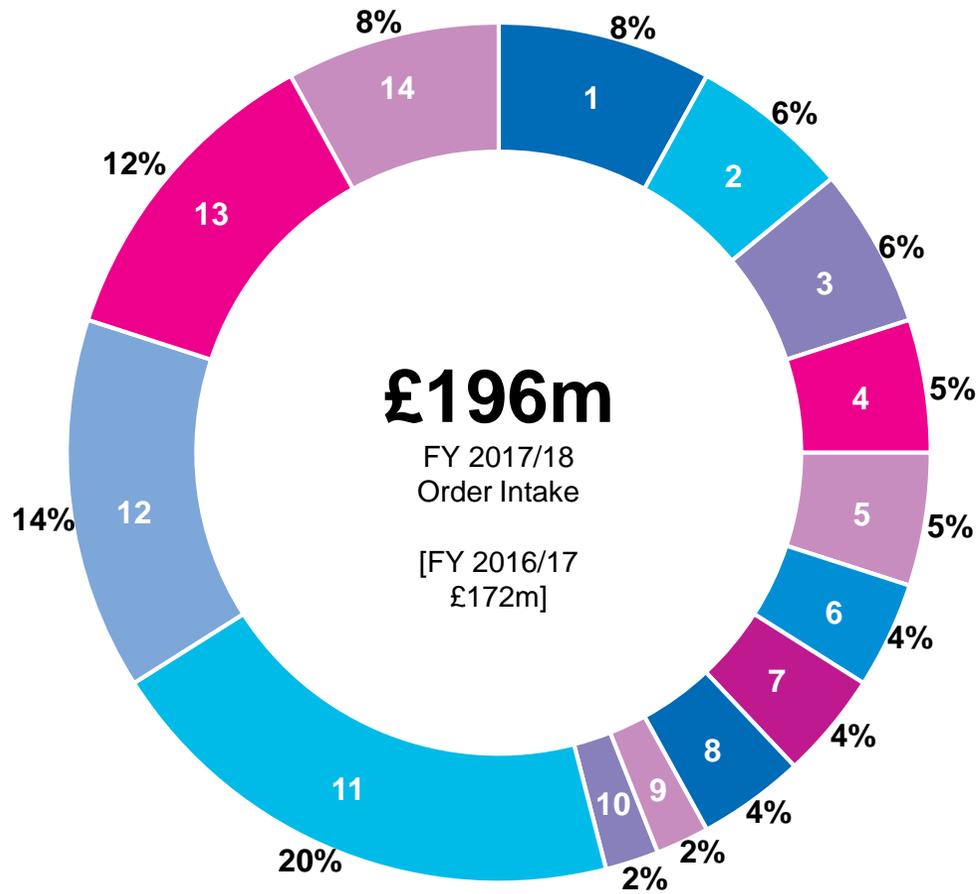
- Delivering solutions aligned with key areas of future growth and aligned to core areas of Ricardo capability:
  - Efficient ICE (Low Friction, Emissions, Virtual Calibration)
  - Electrification and Electronics (Battery Systems, Functional Safety, CAV)
  - xEV Driveline and Controls (Hybrid Transmissions, Advanced Controls)
  - Vehicle System Integration (Cyber, NVH, Thermal, Vehicle Dynamics)
  - Virtual product development tools and processes to meet increasing demand for faster technology deployment with fewer prototypes



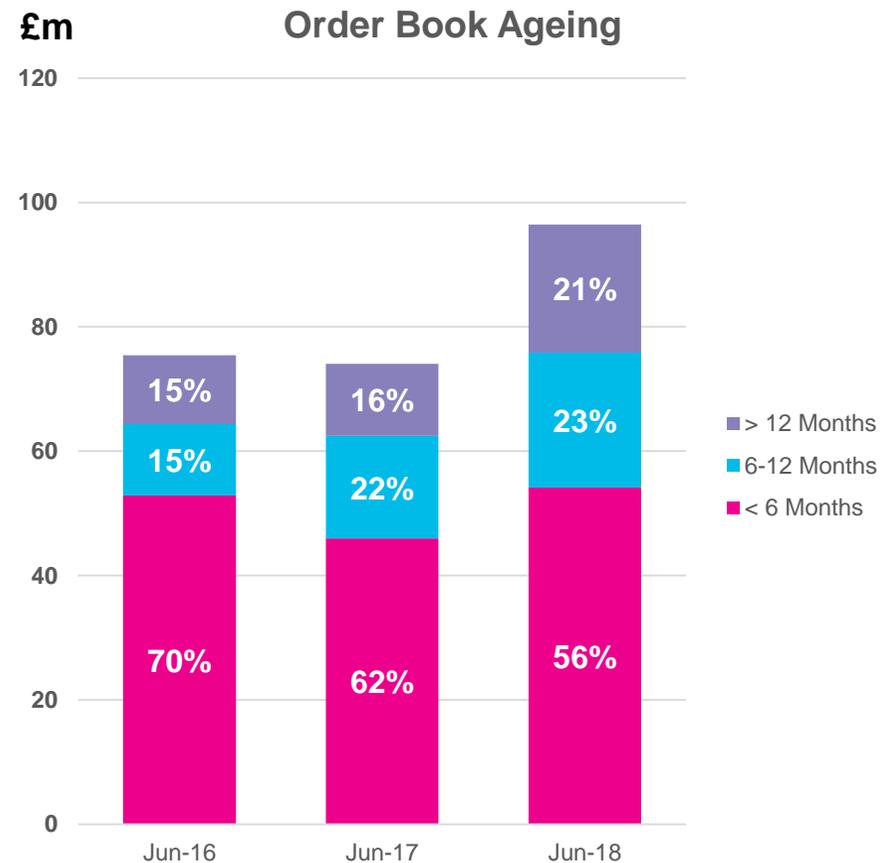
# Focus on Automotive – Technical Consulting



- Over 580 live projects
- No of people – 1,600
- Revenue of c. £175m



- |                 |                   |                                 |
|-----------------|-------------------|---------------------------------|
| 1. Key Client 1 | 6. Key Client 6   | 11. Other Asia clients          |
| 2. Key Client 2 | 7. Key Client 7   | 12. Other North America clients |
| 3. Key Client 3 | 8. Key Client 8   | 13. Other UK clients            |
| 4. Key Client 4 | 9. Key Client 9   | 14. Other Europe clients        |
| 5. Key Client 5 | 10. Key Client 10 |                                 |





**Delivering Excellence Through Innovation and Technology**

## **New Holland Agriculture**

Ricardo is supporting New Holland Agriculture, a brand of CNH Industrial N.V., who are leading a consortium to improve the performance, autonomy and efficiency of the brand's concept natural gas tractor. This will aim to significantly reduce the carbon footprint of agricultural tractors used on farms and within the wider community.

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## Toyota's second generation fuel cell Class 8 truck

Ricardo's Detroit technical facility assisted Toyota in the design, build, testing and development of Toyota's second generation heavy duty zero emissions fuel cell truck. The new truck delivers a range in excess of 300 miles – 50 percent more than the 2017 Alpha truck – together with many further operational enhancements.





### Delivering Excellence Through Innovation and Technology

## London's TX range-extended electric taxi

Ricardo supported LEVC (part of Geely Commercial Vehicle) to help with the development of the next generation taxi. The resulting TX is an ultra-low emissions vehicle which surpasses the very latest air quality regulations. The vehicle which entered service following its certification to carry fare-paying passengers in December 2017, is regarded as the world's most advanced electric taxi.

# Focus on Performance Products

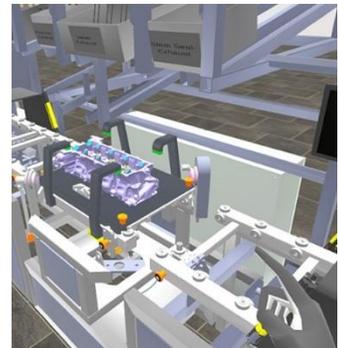


## • Business drivers

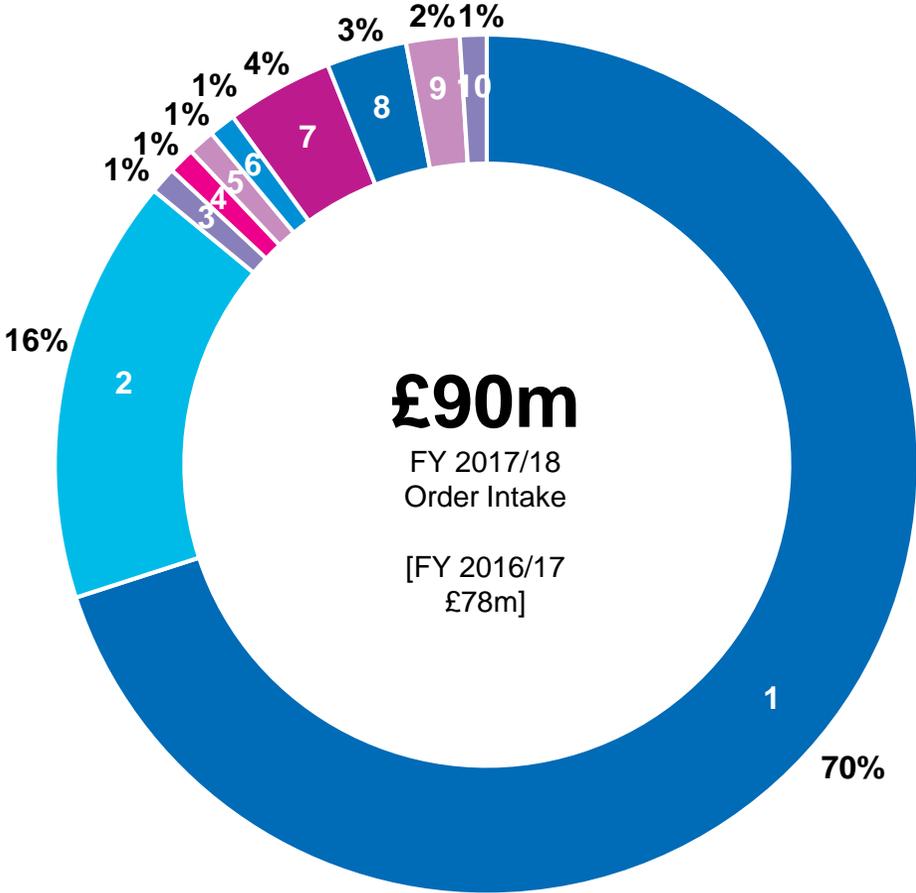
- The need for high performance & quality powertrain and vehicle products (engine, driveline, transmissions, brake systems) for motorsport, niche and low volume high performance vehicles
- The need for electric vehicle components (battery packs, BMS, DC/DC convertors, invertors/drive systems, motors etc) for niche to low volume OEMs
- The need to cross the chasm from prototype to high volume production with selected Tier 1 – set up and interim “Bridge to Production” supply
- The need for advanced virtual product development tools/SW – powertrain (ICE/EV) and vehicle
- The need for advanced system modelling and business optimisation tools for networks (water, electricity, transport)

## • What is our approach?

- Building on history, network, experience and reputation of performance product delivery from motorsport to world recognised premium vehicles
- Close working with Technical consulting to offer “design to production” solution of ICE and Electrified products – understanding future market requirements
- Continued development of world leading engineering development software tools for whole vehicle, ICE and EV
- Cross fertilisation into new markets and further development of complex system modelling tools to aid “business level operational and Capex decision making”

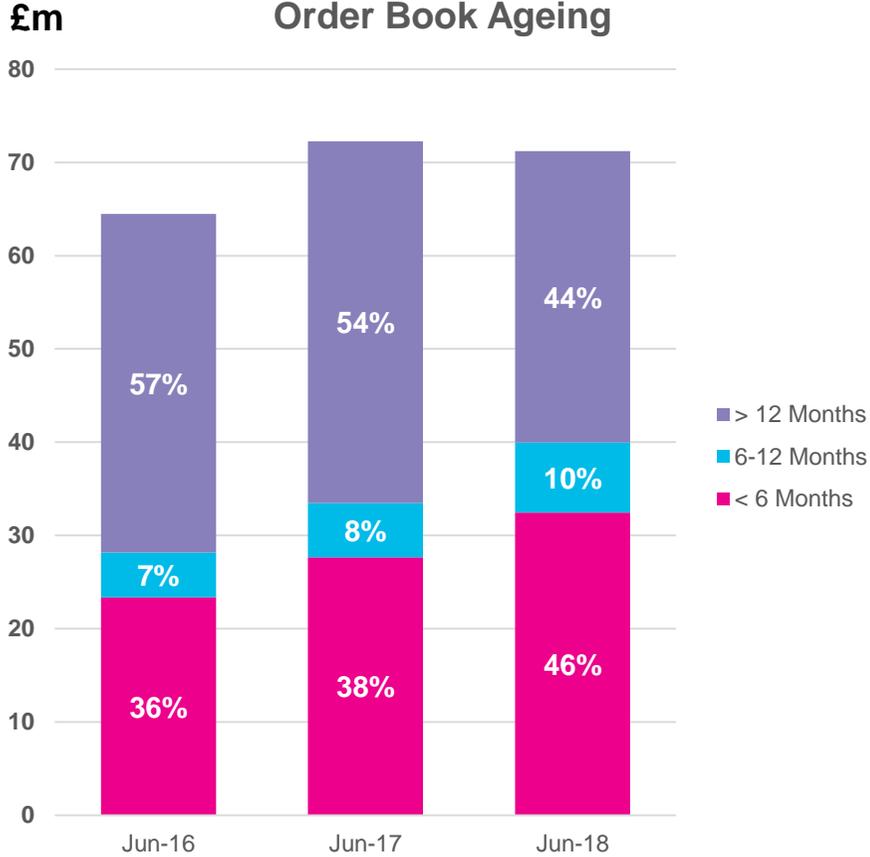


# Focus on Performance Products



- Over 20 live projects
- Contracts outside of order book is > £100m
- No of people – 410
- Revenue of c. £90m

- |                 |                                 |
|-----------------|---------------------------------|
| 1. Key Client 1 | 6. Key Client 6                 |
| 2. Key Client 2 | 7. Other Asia clients           |
| 3. Key Client 3 | 8. Other Europe clients         |
| 4. Key Client 4 | 9. Other UK clients             |
| 5. Key Client 5 | 10. Other North America clients |





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## McLaren 720S V8 Engine Production

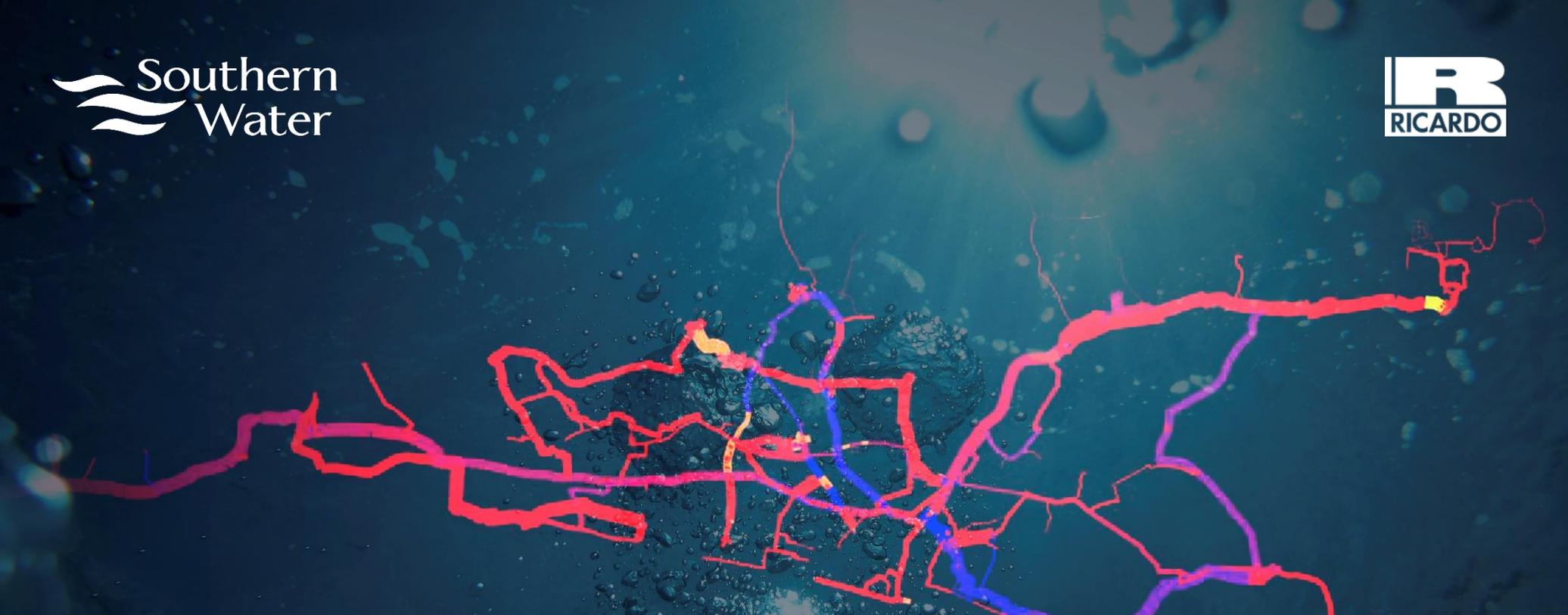
As the 6<sup>th</sup> generation of engine produced by Ricardo for McLaren, the 720S represents the first increase in engine capacity to 4 litres. Over 25% of the engine was new, including a state of the art turbo charging system. Recognised as the first of a new generation of supercars from McLaren, the 720s has been met with critical acclaim. The engine entered production towards the end of 2017 and is already well on track to be the most successful model to date.

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## Antilock Brake and Stability Control System

First orders for Ricardo Defense's bespoke stability control systems for the US HMMWV have now been received, working closely with both military and major suppliers to deliver this important technology onto the vehicles.





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## Implementation of Web Based Technologies into Water System Tool

Southern Water are actively looking to transfer new technologies into the water industry and, with Ricardo, are developing IGNITE as a strategic network modelling tool. Ricardo has integrated a series of web based technologies to develop a fully customised solution for SWS. This will deliver a strategic tool to allow Southern Water to assess future resilience, performance and efficiency. The output will be applied to guide investment decisions for critical system infrastructure to secure future customer supplies.

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# Appendix

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# Income statement – Underlying and total Group



£m	Year ended 30 June						Year on Year growth	
	2018 Underlying	2018 Specific adjusting items <sup>(1)</sup>	2018 Total	2017 Underlying	2017 Specific adjusting items <sup>(1)</sup>	2017 Total	Underlying <sup>(1)</sup>	Total
Revenue	380.0	-	380.0	352.1	-	352.1	8%	8%
Gross profit	138.9	-	138.9	132.9	-	132.9	5%	5%
Administration costs	(97.7)	(10.5)	(108.2)	(92.1)	(6.1)	(98.2)	6%	10%
Operating profit	41.2	(10.5)	30.7	40.8	(6.1)	34.7	1%	(12)%
Net finance costs	(2.2)	-	(2.2)	(2.5)	-	(2.5)	(12)%	(12)%
Profit before tax	39.0	(10.5)	28.5	38.3	(6.1)	32.2	2%	(11)%
Taxation charge <sup>(2)</sup>	(8.3)	(1.3)	(9.6)	(8.8)	1.4	(7.4)	(6)%	30%
Profit for the period	30.7	(11.8)	18.9	29.5	(4.7)	24.8	4%	(24)%

(1) Specific adjusting items comprise amortisation of acquired intangible assets, acquisition-related expenditure, reorganisation costs and de-recognition of related net deferred tax assets.

# Specific adjusting items



£m	Year ended 30 June	
	2018	2017
Amortisation of acquisition-related intangible assets	4.3	4.0
Acquisition-related expenditure	1.4	1.7
Reorganisation costs	4.8	0.4
<b>Total included in profit before tax</b>	<b>10.5</b>	<b>6.1</b>
De-recognition of net deferred tax assets <sup>(1)</sup>	2.2	-
Tax impact of specific adjusting items	(0.9)	(1.4)
<b>Total included in profit after tax</b>	<b>11.8</b>	<b>4.7</b>

(1) A net deferred tax asset of £2.2m (€2.5m) which primarily comprised £2.4m (€2.7m) of historical losses incurred in the consolidated tax group controlled by Ricardo GmbH, partially offset by £0.2m (€0.2m) of deferred tax liabilities, was brought forward from the prior year. Due to the various restructuring actions taken in Germany during the year, the Directors now consider it unlikely that sufficient relevant future taxable profits will be available in the foreseeable future, against which the carrying value of the brought forward deferred tax asset can be utilised. Consequently, this brought forward deferred tax asset was de-recognised during the year.

# Reorganisation costs



£m	Year ended 30 June	
	2018	2017
Profit on sale of Chicago test assets	1.4	-
Costs related to US downsizing activities	(0.7)	(0.2)
Profit on sale of Germany test assets	0.2	-
Costs related to Germany downsizing activities	(4.8)	-
Costs related to the set-up of Prague shared service centre	(0.5)	(0.2)
Senior management redundancy payments as a result of restructuring	(0.4)	-
<b>Total included in specific adjusting items</b>	<b>(4.8)</b>	<b>(0.4)</b>

# Acquisitions and disposals

## Acquisition

- Control Point is a US full service classified status engineering business which operates principally in the defence sector

	Date acquired	No. of people	Cash consideration	Revenue p.a.	Operating Profit p.a.
Control Point	8 Sep 17	90	\$10.5m	c. \$15m	c. \$1.5m

- Cash consideration of \$2.2m relating to performance to be paid in October 18 and a retention bonus of \$1.0m to be paid in H2 FY 18/19

## Disposals

- In order to reduce our fixed costs and improve efficiency in our international test operations, during the financial year, the Group disposed of test assets at our Chicago and Germany Technical Centres

	Date disposed	Cash consideration	Carrying value of assets disposed	Gain on sale before income tax
Chicago	2 Apr 18	£4.1m	£2.7m	£1.4m
Germany	30 Jun 18	£4.4m	£4.2m	£0.2m

- Cash consideration for Germany was received in two tranches - £1.9m in June 18 and £2.5m in July 18
- The gains on the sale have been included within specific adjusting items

# Impact of new accounting standards

## IFRS 9 'Financial Instruments'

- Financial assets are assessed for impairment which assumes the risk of default increases the more overdue an asset is
- Expected impact to the Group on transition as at 1 July 2018:

	As reported £m	Expected impact £m	As restated £m
Provision for impairment of trade receivables	1.1	1.8	2.9
<i>% gross trade receivables</i>	1.7%		4.4%

- The impact of applying IFRS 9 to amounts recoverable on contracts is considered to be immaterial because AROC is inherently not yet due to be invoiced or paid

## IFRS 15 'Revenue from contracts with customers'

- The Group has performed a detailed analysis of IFRS 15 and the expected impact is summarised below:

	FY18 Opening retained earnings £m	FY18 Revenue £m	FY18 Underlying Operating Profit £m
As reported	112.2	380.0	41.2
Expected impact:			
Separation of multi-year contracts	(2.3)	(0.3)	(0.3)
Commissions and start up fees	(3.2)	(0.8)	(0.8)
<b>As restated</b>	<b>106.7</b>	<b>378.9</b>	<b>40.1</b>

# Global tailpipe and CO<sub>2</sub> emissions legislation adherence are “must haves” in the development budget of many of our clients



Vehicle Type	Region	2010	2015	2020	2025	
Automotive & LCV	EU	Euro 5	Euro 6a Euro 6b	Euro 6d-TEMP - WLTP & RDE	Euro 6d - WLTP & RDE	
		Passenger cars: 130 gCO <sub>2</sub> /km			Passenger cars: 95 gCO <sub>2</sub> /km	15% reduction 2021 target (proposed)
	US (49 States)	Tier 2		Tier 3		
		2012-2016 standards		2017-2025 standards - proposed amended standards for 2021-2026		
	California	LEV II		LEV III		
		LEV II standards (2009-2016)		LEV III (2017-2025, consistent with EPA standards)		
China	China IV (Euro 4)		China 5 (Euro 5)	China 6a - WLTP & RDE	China 6b - WLTP & RDE	
	Phase 2	Phase 3	Phase 4 (Passenger Cars; new standards for LCVs from 2018)			
India	Bharat Stage IV (Euro 4 equivalent)			Bharat Stage VI (Euro 6 equivalent)		
	2017 standards			2022 standards		
Japan	Post New Long Term			WLTP based standards		
	2010 standards		2015 standards		2020 standards	
Motorcycle & Personal Transportation	EU	Euro 3		Euro 4	Euro 5	
	US (49 States)	Tier 2 for Class III; Tier 1 for classes I and II (harmonised with California)				
	California	California Motorcycle limits: Tier 2 for Class III; Tier 1 for classes I and II				
	China	China III		China IV - WMTC		
	India	Bharat Stage III		Bharat Stage IV	Bharat Stage VI	
	Japan	2010 standards		Euro 4 based standards		
Commercial Vehicles (Medium- & Heavy-Duty Trucks)	EU	Euro V	Euro VI		Monitoring and reporting CO <sub>2</sub> emissions	
		15% reduction 2019 value (proposed)				
	US (49 States)	EPA 10		Phase 1 federal standards		
				Phase 2 (2018-2027) federal standards		
	California	EPA 10		Compliance of older vehicles to EPA 10 - Optional low NOx limits		
				Phase 1 federal standards		
			Phase 2 (2018-2027) federal standards			
China	China IV		China V	China VI		
	Phase 1 standards		Phase 2 standards		Phase 3 standards	
India	Bharat Stage IV			Bharat Stage VI		
				Phase 1 standards	Phase 2 standards	
Japan	Post New Long Term		2016 standards			
	2015 standards			2025 standards (proposed)		
Off-Highway	EU	Stage IIIB		Stage IV	Stage V	
	US	Tier 4 Interim		Tier 4 Final		
	China	Stage II		Stage III (Nationwide)	Stage IV (Beijing)	Stage IV Nationwide (proposed)
	India	Bharat Stage III - Tractors and CEV			Bharat Stage IV - Tractors and CEV	Bharat Stage V - Tractors and CEV
	Japan	2006 Non-road standards	2011 Non-road standards		2014 Non-road standards	
Rail	EU	Stage IIIA	Stage IIIB		Stage V (Locomotives and railcars)	
	US	Tier 2	Tier 3		Tier 4 Switch & line locomotives	
	India	Not yet regulated			Proposed standards under consideration	
	Australia	Not yet regulated			Studies ongoing to adopt US legislation	