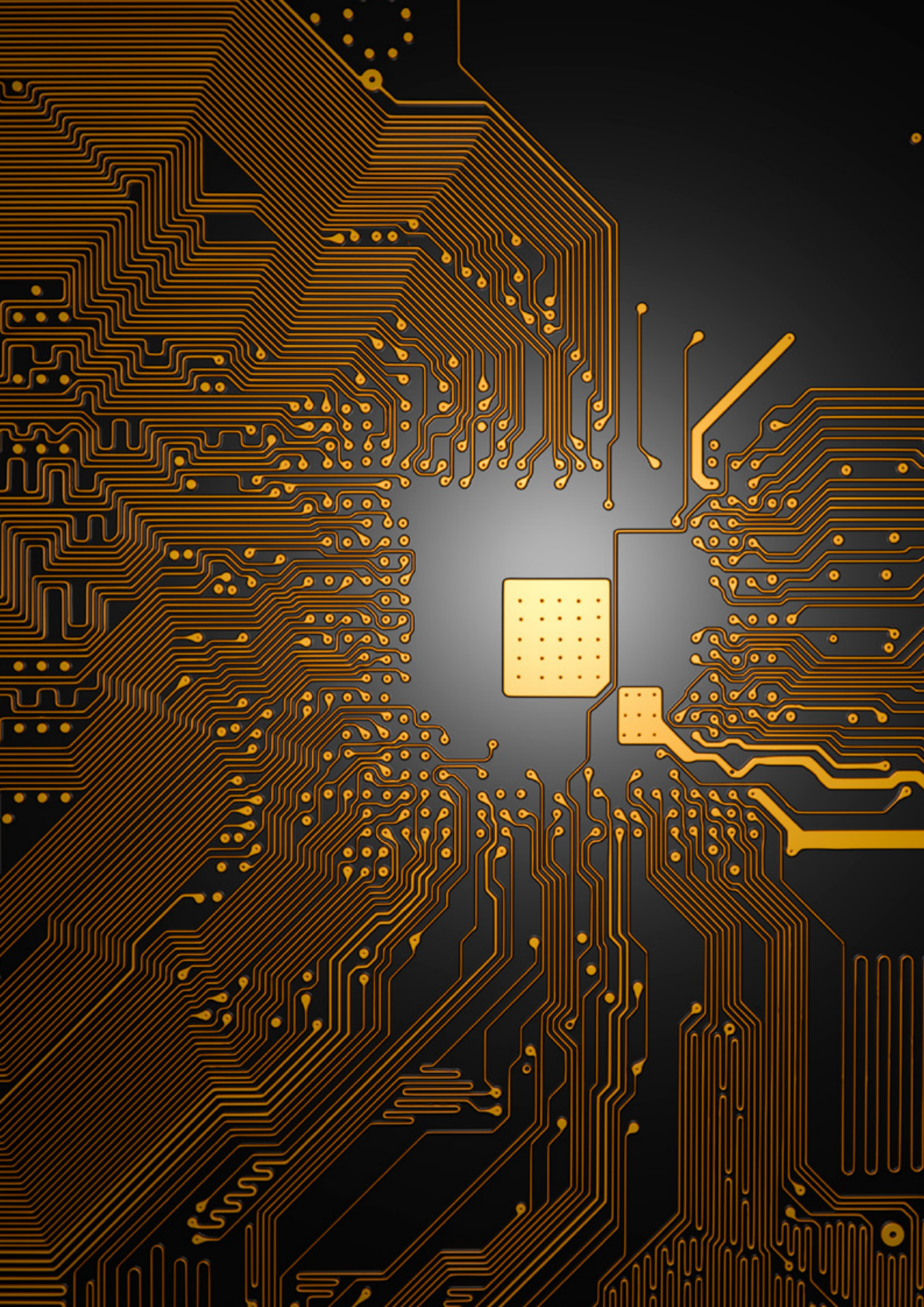


Shaping the future

Delivering solutions today



Shaping the future

Delivering solutions today

At LR, each day we deliver solutions for our clients to address challenges, achieve milestones and maximise opportunities.

And we are shaping the future through the development of new and innovative technology for the next generation of assets and businesses.

Because, while we are proud of our history, it's creating tomorrow that drives us.

Working together for a safer world

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Key

 Read more  Find out more online

At a glance

Our organisation

Who we are

Working together for a safer world

- Lloyd's Register helps to protect life and property and supports education and engineering-related research.
- We do this through a commercial entity, LR, a leading provider of engineering-centric, global professional services that improve the safety and performance of complex, critical infrastructure for our clients and for society.
- And through a charitable arm, the Lloyd's Register Foundation, which through its network is able to provide unbiased world-expert research and education in science and engineering.
- Founded in 1760 as a marine classification society, LR now operates across multiple industry sectors, with some 8,000 employees operating in 78 countries and headquartered in London, UK.

£881m
turnover

195
offices worldwide

8,000
employees worldwide

60,000
clients, from SMEs to
Fortune 500 companies

What we do

Compliance

Supporting safe and reliable operations

LR works with a diverse mix of companies to support safe and reliable operations, ensuring the adherence to rules, regulations and standards.

LR provides support to over 60,000 clients globally. Each and every one of these clients operates their business or assets to exacting standards. LR's independent advice and audit services ensure that appropriate standards, rules and regulations are professionally applied to provide our clients with the necessary licenses to operate safely and reliably.

Assurance

Assessing and minimising risk

Many of LR's clients operate significant and complex businesses, ranging from nuclear power, to oil and gas exploration, to global shipping. Such industries are not without risk. LR has extensive expertise of assessing and minimising the risk of operation, providing assurance and compliance to standards, while identifying and evaluating the risk of variance to the standard. LR's experts also provide advice to mitigate risk, thus ensuring that our clients are assured that their operations are both safe and reliable.

Performance

Improving business results

In today's increasingly competitive world, our clients are continually striving to improve. This improvement takes many forms and can be enhanced safety and reliability, improved efficiency, greater throughput, or simply lower costs of operation.

Similarly, LR seeks to provide advice and services that support the drive for enhanced performance, such as:

- data centric operations that reduce the need for human intervention using remote data sensing, robotics and autonomous systems
- reliability and maintenance regimes that can extend the life of assets
- training to enhance customer competence
- engineering consultancy that is delivered by global experts who are at the forefront of industry thinking.

What sets us apart

Social business

Safety has been at the heart of our work since 1760 and we invest our time, money and resources to help fulfil our mission, through our everyday activities and by generating profits that help fund the Lloyd's Register Foundation.



Technical expertise

Our reputation for technical excellence relies on the skills, knowledge and experience of our employees. We are at the forefront of understanding the application of new science and technology to future-proof our clients' businesses, harnessing and analysing data to provide our clients with rich management information and innovative decision making tools.



Independence

Our independence from government and beneficial shareholders means that we can provide reliable, impartial and informed advice that you can trust, free from compromise, free from prejudice.

Breadth of service

Our compliance, assurance and performance services provide clients with confidence through the asset lifecycle and across the supply chain.

Over the last five years our total recordable injury rate has reduced

42%

Global reach

LR has a truly global view, with 8,000 employees based in 195 offices worldwide – closer to clients and closer to market. We are uniquely placed to understand and provide commentary on issues and trends in local markets, from a global viewpoint.

£20.2m

donated to Lloyd's Register Foundation to support science and engineering research and education

Our business divisions



Marine & Offshore

We are a leading international provider of classification, compliance and consultancy services to the marine and offshore industry, helping our clients design, construct and operate their assets to the highest levels of safety and performance.

We are shaping the industry's future through the development of novel and innovative technology for the next generation of assets, while continuing to deliver solutions for our clients every day.



Energy

We are a technology-enabled global leader, helping clients and regulators across the energy industry – including oil and gas, chemical, petrochemical, nuclear power and renewables – design, construct and operate their capital intensive assets to the highest levels of safety and performance. Our independent expertise is applied to resolve and share solutions to the most complex challenges and operational requirements, providing the confidence demanded by engineering principles, government regulations and industry codes and standards.



Management Systems & Inspection Services

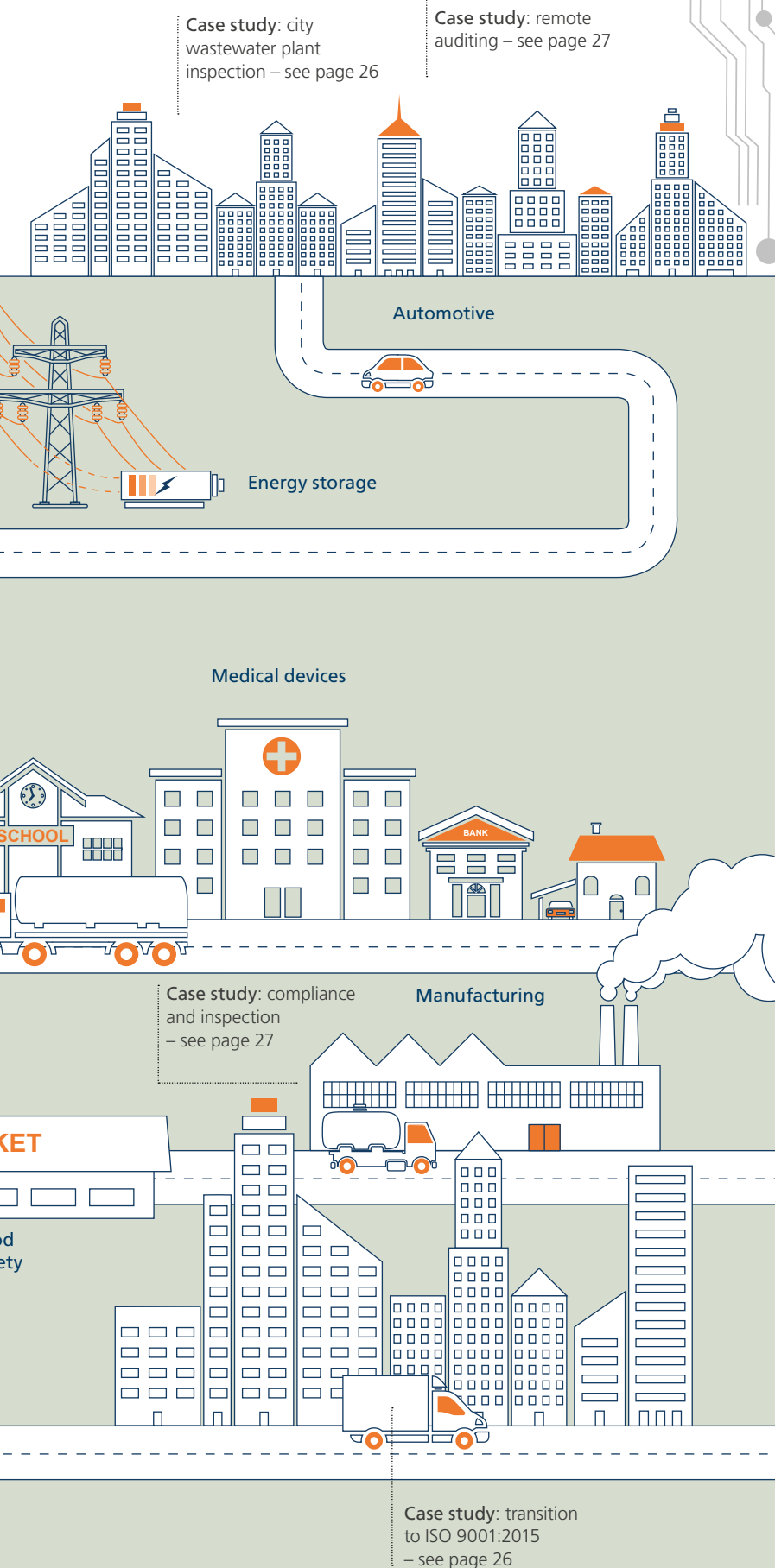
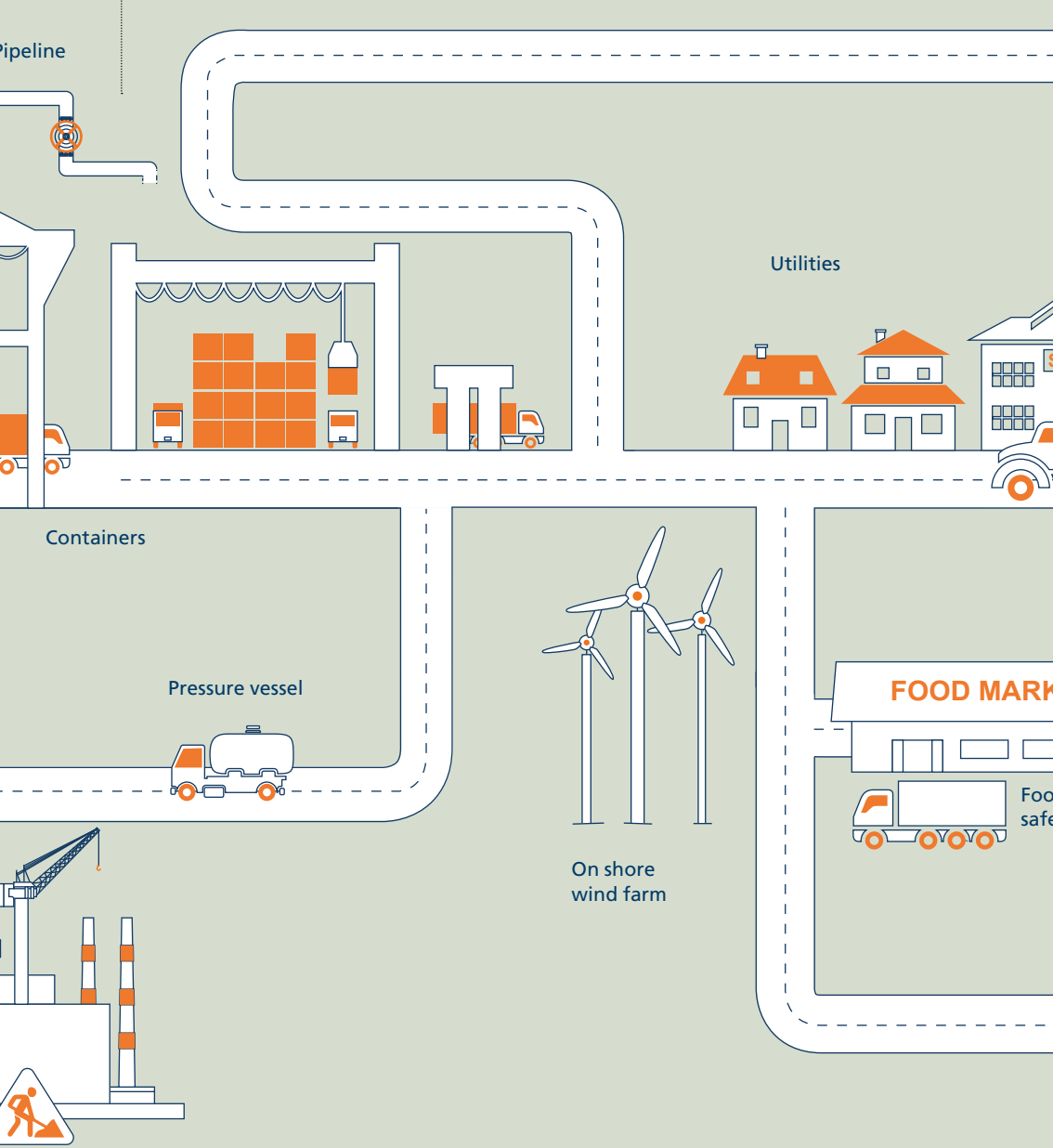
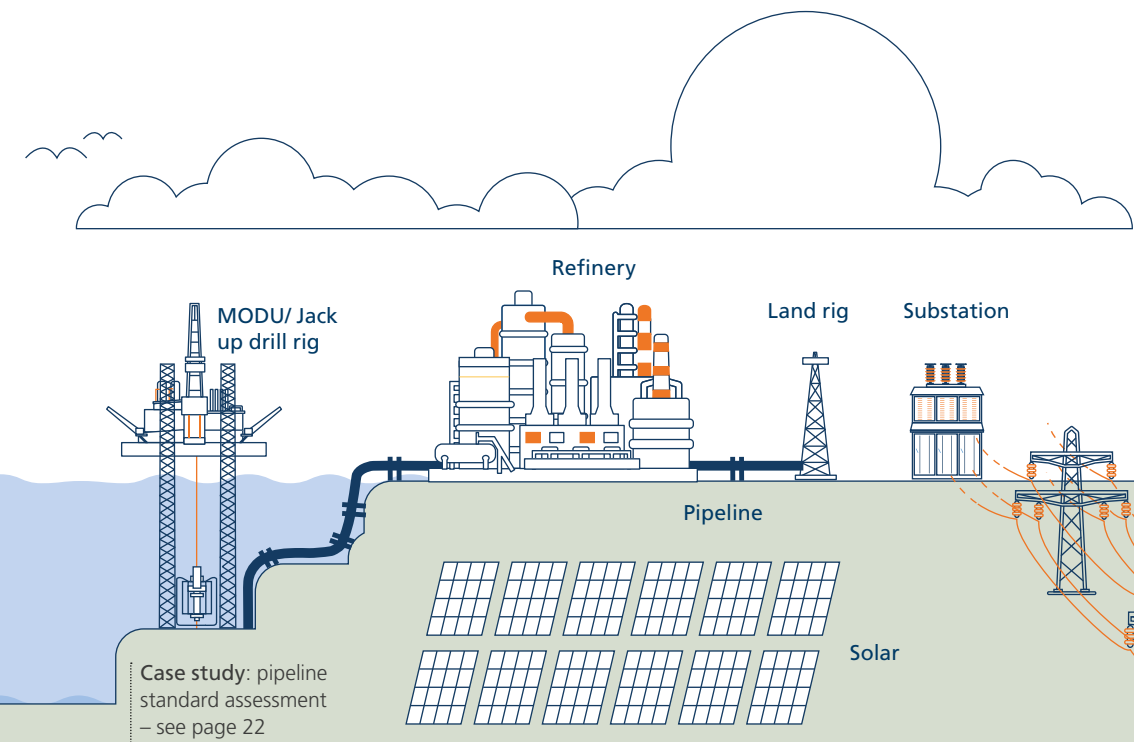
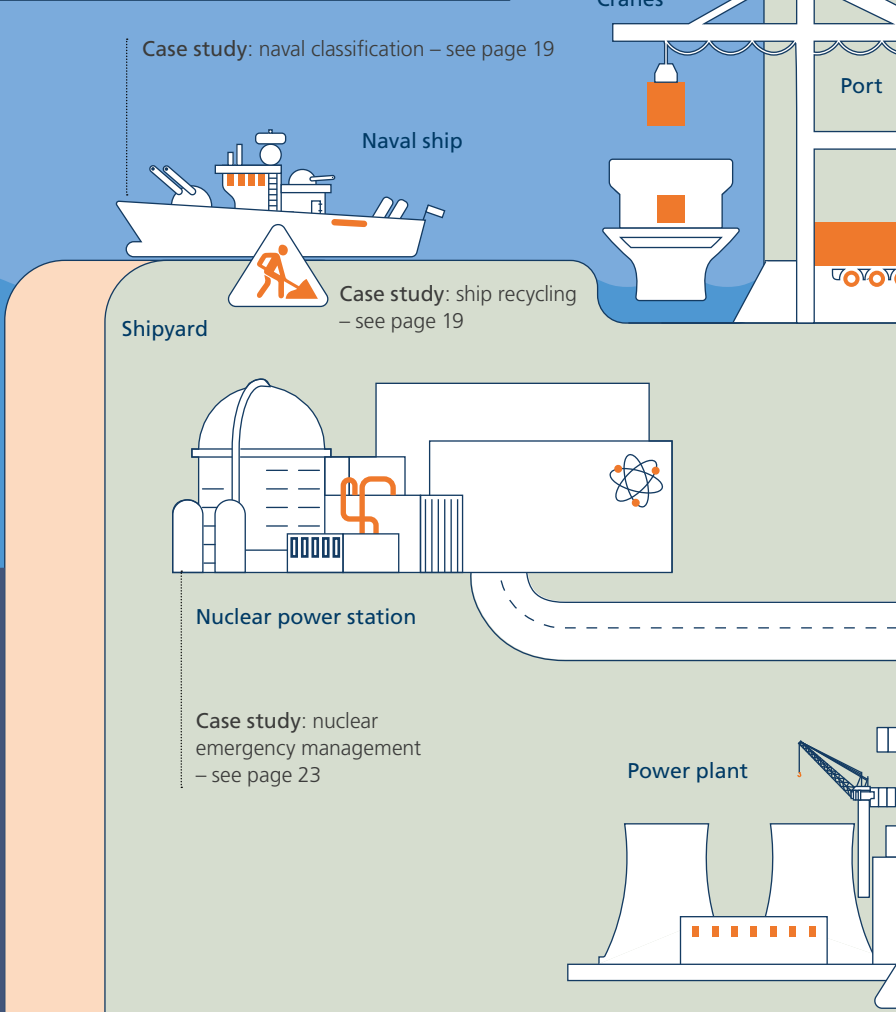
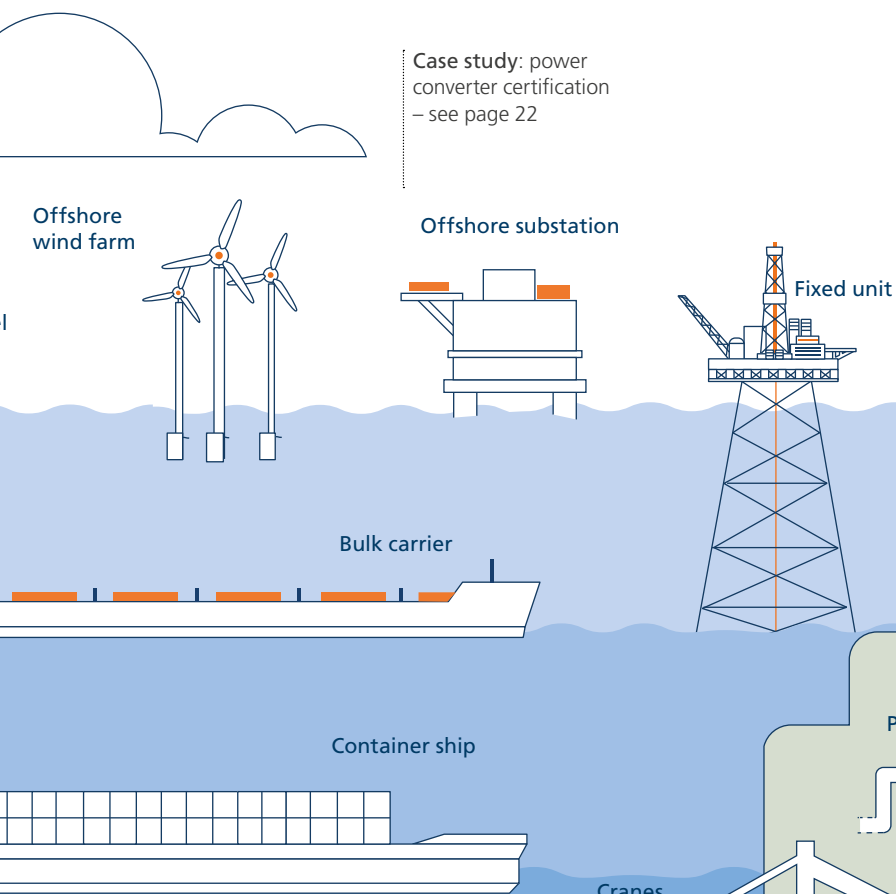
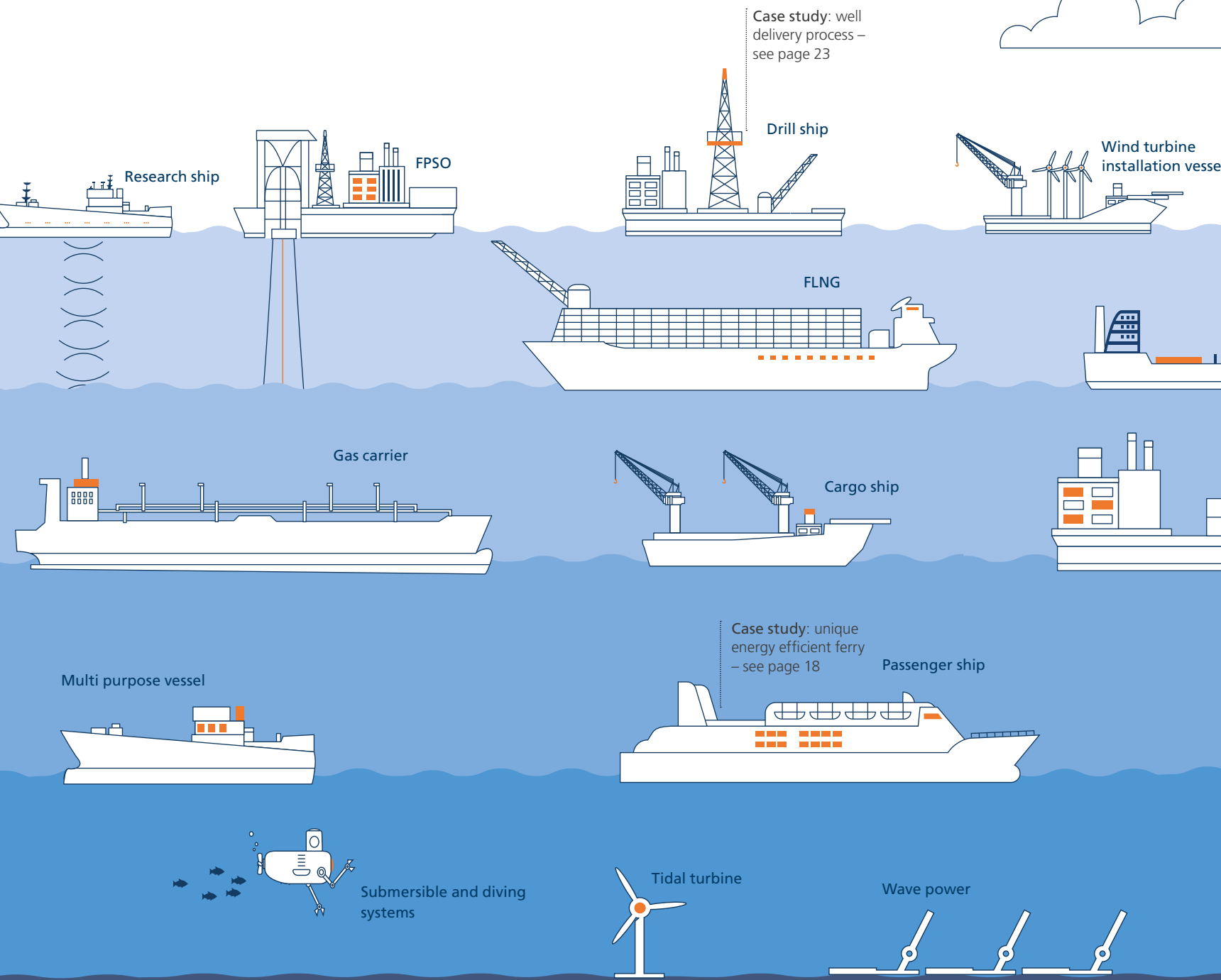
Our Management Systems business, known as LRQA, is a recognised, world-leading professional assurance services organisation. We specialise in management systems compliance and expert advice across a broad spectrum of standards, schemes and business improvement services to include customised training and assurance.

In Inspection Services, we certify safety-critical industrial equipment according to recognised codes, standards and regulations. We also partner with companies to provide tailored high-quality inspection services throughout their manufacturing supply chains, making sure equipment is built safely and to their requirements.



Where we work

Compliance, assurance, performance



Along supply chains and across business sectors

We offer a joined-up service to companies with international operations and supply chains. On these pages we show some of the critical infrastructure assets we work on over a wide range of business sectors – at sea and on land – from ships to power plants, manufacturing to food processing, from design, through operation to decommissioning and recycling. We are ever improving the way we carry out work, from assurance using real time data and remote audits to surveys using drones.

And at work behind this illustration there are compliance, assurance and performance services to help our clients. Our training services are designed to meet the knowledge and skills development of our clients' workforce; part of our commitment to improving the safety and performance of companies worldwide. On environment and sustainability, and within the climate change arena, our services help clients to both meet regulations and go further, by implementing voluntary improvements which can have significant business and environmental benefits.

Chairman's review

A challenging year but LR has key ingredients for success



The continued slump in oil prices throughout 2015/16 combined with the slowdown in new construction orders in marine and economic uncertainty as a result of Brexit, created challenging economic conditions for LR.

Excluding the prior year results from our transport business, which we sold at the beginning of the year, turnover reduced by £109 million (11%) to £881 million. This was largely as a result of difficult trading conditions in the energy market. The challenges we have faced have led to a reduction in operating profit to £53 million before restructuring costs, disposal of operations and impairments (2015: £60 million excluding operating profits from the rail business).

Since taking over formally as CEO in October 2015, Alastair Marsh and his committed team have undertaken an extensive review of our group strategy which he outlines overleaf. We have a robust plan to strengthen our business and invest for the future and we are confident that we can ride the economic headwinds. We have inevitably taken steps to reduce our headcount in line with market conditions and reduce our cost base and we are now in good shape to drive growth against the backdrop of continued economic uncertainty.

“

Investing in our understanding of evolving technology continues to be fundamental to being able to provide value to clients and help them to ensure their operations are safe, sustainable and reliable.

“

We are looking at a world of continuous disruption through digital and cyber-physical advancements that are impacting every aspect of our society. LR is well placed to support society and our clients with these challenges and opportunities.

The world today

Attending the World Economic Forum in Davos in January 2016, what was striking around the outputs from the forum is that the major themes of LR's strategy are at the heart of the agenda for many global clients. The forum brought together leaders from business, government, academia and the media to discuss the big issues facing the world. We are looking at a world of continuous disruption through digital and cyber-physical advancements that are impacting every aspect of our society. LR is well placed to support society and our clients with these challenges and opportunities and I am pleased to see the focus on digital and innovation in our group strategy.

Investing in our understanding of evolving technology continues to be fundamental to being able to provide value to clients and help them to ensure their operations are safe, sustainable and reliable. Our global technology centres in Southampton and Singapore are leading industry research into these challenges.

A positive culture

Our values direct us in shaping a positive culture throughout the organisation and with all our stakeholders. The expression of our values, 'we care; we share our expertise; and we do the right thing', guides LR in making the right decisions for clients, employees and society.

We set ourselves high ethical standards. Our code of ethics and whistle-blowing policy help us to ensure compliance with legislation including requirements that neither slavery nor human trafficking should take place within our business or supply chain. All our employees and contractors are required to comply with our anti-bribery and anti-corruption policy.

The health, safety and welfare of our employees is our top priority. We are continuously improving our safety programme and over the last five years the total recordable injury rate has reduced by 42%: but we must not become complacent. To strengthen our safety culture and to help further improve our safety performance, we have introduced a three year strategy. The strategy is founded upon a clear aspiration that is both engaging and challenging: zero harm to people. Through the programme, we aim to 'make safety personal' to every employee and improve the focus on clear visible leadership of safety, strengthen local accountability and define safety-critical behaviours.

Our people

During what has proven to be a challenging year, on behalf of the Board I would like to thank all our colleagues around the world for their efforts and dedication. I would also like to thank our highly experienced and committed Board directors for their continued governance and support.



To strengthen our safety culture and to help further improve our safety performance, we have introduced a three year strategy. The strategy is founded upon a clear aspiration that is both engaging and challenging: zero harm to people.

Of particular note, John Chandris and Richard Sadler stepped down from the Board, and our gratitude goes to them for their huge contribution to our work over many years. We are pleased to welcome Caroline Firstbrook, who joined the Board in July 2015, and Mary Waldner, LR's Chief Financial Officer, who joined the Board in April 2016. It is with great sadness that we said goodbye to Garret Wellesley, 7th Earl Cowley, a tremendous supporter of LR over many years, who passed away in June 2016.

As we move into the new financial year we are fully aware that there will be more challenges to come. However, we have started the year in the best possible position with a strong leadership team, a clear and compelling strategy and a global team of exceptional people living our values. We have all the key ingredients we need to make this year a successful one for LR.

Thomas Thune Andersen

Chairman, Lloyd's Register Group Limited
and Chairman, Lloyd's Register Foundation

Chief Executive's review

New strategy for sustainable growth and improved client support



The first full year as CEO has proven to be an incredibly challenging and interesting period. It certainly was an extraordinary time to step into my new role with world events such as Brexit and the US elections reflecting the general mood and anxiety around the world about the future.

My priority this year was to undertake an extensive review of our strategy and I spent a great deal of time listening to the ideas and concerns of clients and colleagues – valuable feedback that has helped shape the future of LR. We undertook an extensive review of our business activity and drew up a new strategic plan with significant input from clients, employees and other stakeholders.

Our strategy

Society and our clients are facing unprecedented global challenges. Population growth, urbanisation and prosperity are putting pressure on our finite natural resources and the environment. Fossil fuel consumption resulting in emission of greenhouse gases are contributing to global warming and climate change.

At the same time, rapid developments in technology and the digital economy, the backbone of the fourth industrial revolution, are transforming the way we live and work, creating enormous opportunities and challenges for society and business. The global trade in goods and services relies on economic stability and the safe, secure and sustainable operation of the critical infrastructure and systems in our ever-more complex global supply chain.

LR has an increasingly important role to play. Our strategy is to strengthen our current business and extend our portfolio of professional services into new markets created by these global challenges impacting complex critical infrastructure. Our leading safety culture and expertise in managing risk will enable LR to offer client value from our compliance, assurance and performance solutions. This will deliver resilient financial performance and sustainable growth.

Restructuring and investment

After 10 years of steady year-on-year growth at LR, this year has seen both the impact of overcapacity in the shipping markets and softening in the oil and gas markets.

Given the challenging market conditions, one outcome from our strategy review has been a restructure of our business streams. To give the Energy business greater focus in the current market, Inspection Services has been combined with our Management Systems business and Compliance with the Marine business, now called Marine & Offshore. The new business combinations have marketing- and sales-driven growth synergies and align with our new strategic plan.

We have of course had to take some prudent and difficult decisions to reduce our costs. However, these decisions, and the move from our regional organisation to the new six area structure to operate in a much more consistent, collaborative and agile way, were the right decisions for the long-term success of LR and to better support our client base.

Investment in our IT infrastructure continued during the year, with the introduction of our new HR system shortly after year end as the first phase of our new SAP-based ERP (enterprise resource planning) system. Once completed our new systems will result in a more standardised and responsive service to our clients and provide the backbone to improve our business performance.

“

My priority this year was to undertake an extensive review of our strategy and I spent a great deal of time listening to the ideas and concerns of clients and colleagues – valuable feedback that has helped shape the future of LR.

Our strategic priorities

Zero-harm safety culture – continually strengthening our safety culture

Strengthen core business – resilient growth in all core markets and extension into geographies with high-potential growth opportunities

Build sustainable growth by extending our portfolio – a portfolio of services in four interconnected areas: physical asset and cyber integration, low-carbon and asset-lifecycle management, connected global supply chains, and human asset management

Preferred partner of choice – a proactive, market led, customer-focused organisation which strives to deliver higher value to clients, underpinned by technical excellence

Data-centric engineers; digitally enabled – harnessing and analysing data to provide our clients with rich management information and innovative decision making tools

Operational excellence through being technology-enabled and agile – an integrated, efficient and agile organisation, enabled by technology to drive excellent service delivery

Influencing our world – a proactive approach to access new and existing markets for new business through greater market influence

Exceptional people who live our values – empowered, collaborative, competent experts who are driven to succeed, fail quickly and learn

Marine performance

Our Marine business performed well, with turnover of £400.1 million (2015: £400.8 million) – the slowdown in new construction orders in Asia being balanced by strong growth in our consultancy revenue and in our type approval services.

Our share of the world's fleet is increasing and currently sits at 15.5%. Despite the slowdown in the new construction market, LR leads the global order book for new construction in terms of mGT with a significant 22.3% market share.

During the year we continued to deliver leading performance in supporting our clients with their fleet operations, investing additional resources to improve customer service and response times. LR ranked as a top performing classification society by the United States Coast Guard (USCG) and the Australian Maritime Safety Authority (AMSA) and achieved high ranking positions in the Paris and Tokyo MOU.

Looking to the future, LR is taking a leading position in cyber-enabled ship design and operation to help the industry to embrace the safety and performance benefits that technology now offers. We are working with leading industry players to make autonomous shipping a practical reality.

Energy performance

The Energy business generated turnover of £309.2 million (2015: £421.2 million), a 26.6% decrease on the previous year (25.2% on a constant exchange rate basis).

The business performance has been significantly impacted by challenging market conditions. Revenues across the oil and gas sector have dropped by as much as 60% in two years with clients deferring or cancelling projects. The low oil price also had a significant impact on our inspection services.

In response, we have transformed our business by addressing our cost base while ensuring that we continue to provide the right level of technical support for our clients. At the same time we have continued to diversify, providing support to clients with

decommissioning and transitioning to low carbon energy, including nuclear and renewable energies and natural gas. This development is driven by the increasing assurance needs around the design and commercialisation of new technology, such as the miniaturisation of small and medium sized reactor technology and China's first floating nuclear vessel, as well as the rapidly falling cost of renewables.

Market expectations are that oil prices are unlikely to head significantly higher than \$60 per barrel in 2017, and further market volatility can be expected. While our work in the downstream chemical industries and refineries will partially compensate for reduced upstream production, our focus on low carbon energy production, including nuclear, offshore wind, and wave power generation, will further our ambitions next year and beyond.

Management Systems (LRQA) performance

Our Management Systems business generated turnover of £171.8 million (2015: £168.6 million), a 1.9% increase on the previous year.

In 2015/16 we continued to invest in building the business for the future, through restructuring our organisation for growth, internal efficiency initiatives, greater investment in sales and marketing and diversification of our service offering.

During the year the rollout continued of our new improved client portal which will not only deliver improved productivity but will also ensure a more positive client experience.

Key strategic investments included the adoption in June of the greenfence™ platform – the food industry's first remote auditing and certification platform. This technology-enabled service will allow us to deliver more value to clients, initially in the food sector, but there are also opportunities to apply the technology in other LR markets.

The revisions of the two main ISO standards – ISO 9001 (quality) and ISO 14001 (environmental) – represent a significant opportunity for our organisation through new standards transition assessment and training services.

We will also look to leverage technology, including the greenfence™ platform, to deliver more value to clients and expand the market opportunities. In particular, there is the opportunity to diversify away from being purely a provider of certification services to a leading provider of professional assurance services, with a focus on collaboration with industry partners and influencers.

Looking ahead

When I look back over the year, we've achieved a huge amount despite very difficult trading conditions. 2016 was the year we put the foundation blocks in place for a new LR that is better equipped to support our clients' challenges and opportunities. Looking ahead there are very real grounds for optimism in 2017.

The convergence of physical and cyber, sensors and automation technologies create enormous opportunities for LR in supporting a more efficient and environmentally-conscious industry. LR will continue to play a leading role in developing the guidance, regulations and risk assurance around all these evolving areas, while working with our clients to enable them to benefit from the technological enhancements through improved performance.

Our drive is to build innovative data and digital services that provide clients with greater assurance and rich insight into to the maintenance, management and performance of their assets and businesses. This is taking shape, with an integrated software business and a range of new products and services.

I'm immensely proud that through our efforts we were able to contribute £20.2 million to the Lloyd's Register Foundation to support the important work that it funds in research into emerging technologies, science and education.

Together with our clients, the LR family is working together for a safer world.

Alastair Marsh
Chief Executive

“

2016 was the year we put the foundation blocks in place for a new LR that is better equipped to support our clients' challenges and opportunities. Looking ahead there are very real grounds for optimism in 2017.

Looking ahead

Cyber-enabled ships

As a trusted provider of safety assurance to the marine industry, LR is ready to help all stakeholders in the cyber-enabled ship market ensure that information and communications technology (ICT) is deployed safely.

Our cyber-enabled ships guidance documents provides the shipping industry with a route map to understanding the implications of digital technology. And LR is working on joint industry projects to design the next level of cyber ships – applying up-to-date information technology, including real-time data transmission and collection, large-capacity calculations, digital modelling and remote control.

[Read more on page 17](#)

Additive manufacturing

From pharmaceuticals to aerospace, several industries have adopted additive manufacturing (AM) as it can create complex parts with a high level of precision with reduced material usage and weight. Combining a component's various parts into one printed component is achievable and can lead to savings in assembly and maintenance.

LR is actively developing expertise in this area, collaborating with key industry companies and academic institutions. One area of focus is the third-party certification of AM parts and components.

Find out more at
<http://info.lr.org/gr2016-am>

“

The convergence of physical and cyber, sensors and automation technologies create enormous opportunities for LR in supporting a more efficient and environmentally-conscious industry.

Remote auditing

The use of technology is becoming an increasing feature in the assurance arena. LRQA has developed a new procedure to define the way that remote audits should be carried out in cases of extraordinary circumstances – such as war, political instability, and other natural or man-made disasters – with the use of computer assisted auditing techniques (CAAT).

We have used guidance from the International Accreditation Forum (IAF) and the United Kingdom Accreditation Service (UKAS) and worked with other technical experts within LRQA to develop the procedure as well as supporting risk analysis and contingency plan templates. The objective of the procedure is to ensure that we can conduct an effective and efficient audit for our client and to maintain the integrity of the accredited management system certificate, so that the audit results are credible. We have ensured that adequate controls are in place and have planned for contingencies around access, confidentiality and liability.

The addition of the greenfence™ platform will strengthen our remote audit offering.

[You can read about a remote audit on page 27](#)

Deployment of unmanned aircraft systems (UAS)

LR has an active research programme for robotics and unmanned systems, encompassing technology, design codes, policies and guidelines on safe and sustainable deployment.

We see UAS as part of the unmanned systems and robotics story, which also includes underwater and ground-based systems.

There is no doubt that these technologies will continue to innovate in the marine, offshore and energy industries – and across the value chain companies are considering how best to leverage the opportunities.

Find out more at
<http://info.lr.org/gr2016-uas>



An LR surveyor attends unmanned aerial system live testing with HD Solution AS on an oil tanker in Lisnave shipyard in Setúbal, Portugal.

July 2015



LR becomes first class society to certify small commercial ships operating in the Caribbean.



Over 60 industry attendees come to the first Pressure Equipment Forum in Italy, run by LR and the Italian Association of Pressure Equipment (AIPE).

October 2015



Innovating in a new environment: Oil and Gas Technology Radar 2015 published.

Find out more at <http://info.lr.org/gr2016-ogtr-2015>

Complete fuel testing service now provided by LR following acquisition of Guardian Marine Testing.

Major co-operation framework agreement signed with Nuclear Power Institute of China for first-of-a-kind floating nuclear vessel.

January 2016

Launch of our global certification framework to help manufacturers and end users of equipment and components achieve best practice in additive manufacturing and a route to certification.

Contracted by Energinet.dk to measure underwater sound propagation for the Horns Rev 3 wind farm substation development.



LRQA joins the Consumer Goods Forum, the world's premier consumer goods organisation.

September 2015

New marine risk-based inspection service combines hull integrity management with class to minimise costs.

LR's Global Technology Centre in Southampton receives a royal opening courtesy of HRH Princess Anne.



Global Marine Technology Trends 2030 report published, examining the transformative impact of 18 technologies on ship design, on naval power and on the use of ocean space in 2030.

Find out more at <http://info.lr.org/gr2016-gmtt-2030>

November 2015



Increased pressure to reduce oil and gas asset downtime prompts LR to launch new software solution, Axxim™.

LR becomes the first independent organisation authorised for Indian Boiler Regulation services across India.

DONG Energy joins with LR in project OPTION, tackling the challenges of oil recovery from reservoirs; DONG Energy delivers data and technical support to strengthen the project scope.

Highlights from our year 2015/16

February 2016



Cyber shipping – LR issues technical guidance for ship design in a digital age.

Find out more at
<http://info.lr.org/gr2016-cybership>

LR is awarded a GBP500,000 contract by LAUGFS to handle key safety and quality checks of the LPG terminal at Hambantota Port in Sri Lanka.

May 2016



LR moved back into Iran post-sanctions, hosting an event in Tehran attended by over 100 of Iran's influential oil and gas, and marine executives – resulting in the signing of MOU's and significant contract wins.

April 2016



United European Car Carriers (UECC) launched *TBN AUTO ECO*, a dual-fuel LNG pure car and truck carrier built to LR class. This vessel is the first of its kind ordered with an LNG fuel propulsion system.

LRQA's sustainability and climate data verification services lend support to CDP's aim of putting relevant climate information at the heart of business, policy and investment decisions.

June 2016

Adoption of greenfence™ platform technology by LRQA will lead to greater levels of assurance for organisations with complex, high-risk supply chains such as food supply.

LRQA becomes first assurance provider to receive global accreditation for revised ISO management system standards.

Launch of global technical helpdesk to inform and advise the technical community on the application of marine and offshore classification and statutory requirements.

Full integration of LR Senergy into Energy business. Launch of enhanced suite of technical services to owners and operators of energy assets and projects – from upstream and downstream oil and gas to power and low carbon infrastructure.



Marine & Offshore review

Investment in technology and capability key to delivering value to clients



Our 2015/6 business performance is consistent with that of 2014/5, having generated a turnover for the period just exceeding £400 million. Viewed in the context of a global market downturn, this speaks to the confidence that our clients continue to have in us delivering value to their business, as well as the expertise of our team in supporting our clients and stakeholders through this challenging market.

“

The down cycle in new construction is proving particularly deep... It is more important than ever that we adjust our business accordingly, while supporting our clients with their operation and quality challenges.

2016 key highlights

- Global alignment of Marine & Offshore business following the business stream restructure.
- Continued leading performance in supporting our clients with their fleet operations as witnessed by PSC rankings.
- Significant expansion of our naval and type approval businesses.

The collapse experienced in dry cargo freight rates, oil price and subsequent decreased demand for offshore assets, combined with the weakness in the containership market and other sectors, has reduced global demand for new ships and floating assets. The ensuing reduction in our revenue has been offset by strong growth in our consultancy offering and increased demand for our type approval services. We also achieved a significant expansion within our global naval business, delivering various high profile contracts including the UK Queen Elizabeth class aircraft carriers project, the first deliveries of classed frigates from China and increased work with the Royal Canadian Navy.

However, the down cycle in new construction is proving particularly deep – and broad – and is an issue that is unlikely to be resolved in 2017. It is more important than ever that we adjust our business accordingly, while supporting our clients with their operation and quality challenges.

We have invested significantly in improving customer service and response times and as a result our share of the world's fleet is increasing. We hold a leading position in the gas and passenger ship markets; we are

well-diversified and an increase in demand for high-tech vessels such as cruise ships, survey vessels and large yachts, in addition to demand from navies for classification services, are all avenues of potential growth. LR also leads the global order book for new construction in terms of mGT, with a 22.3% market share.

New technologies

Translating our technical expertise into commercial benefits for our clients has driven investment in new technologies from our innovation team. Our investments have resulted in successes. These include being the first to market with the issuance of two guidance documents for cyber-enabled ship design and operation to help the industry embrace the safety and performance advantages that this technology now offers. We are also working with leading industry players to make autonomous shipping a practical reality.

At the same time, we continued to deliver leading performance in supporting our clients with their fleet operations, as demonstrated by our latest port state control statistics globally. LR was ranked number one by the United States Coast Guard (USCG) and the Australian Maritime Safety Authority (AMSA) as well as achieving high ranking positions in the Paris and Tokyo MOU.

Our client care and response capability has been further expanded with the introduction of a global network of technical helpdesks. The helpdesks provide an 'always available' support system and an efficient and local service for client technical queries.

Our commitment to implementing smarter and more effective ways of servicing our global client network resulted in 2016 also being the year we aligned our marine and offshore businesses. The derived benefit of this strategy is already being felt across the company, as well as by clients. Marine and offshore teams around the world have worked together to complete two of the world's largest floating structures, the *Pioneering Spirit* decommissioning support vessel and the *Prelude FLNG*.

Cyber-enabled shipping and autonomous ships

There is a revolution happening around us and all over the world. Smart, connected devices will change shipping just as they are already disrupting other industries and impacting our daily lives.

Gartner estimates there will be 20.8 billion such devices in operation across the world by 2020 (excluding smart phones, tablets and computers). We are already seeing autonomous and semi-autonomous cars on our roads, so how long will it be until we see a fully autonomous ship?

A few years ago this may have been viewed as unlikely but cyber systems in shipping are developing rapidly. There are many reasons that have contributed to this, primarily the potential on offer for better business performance. For example, better fuel economy or remote machine monitoring and the potential for improved safety. The development in bandwidth provided by modern satellite communications offers the possibility of integrating and optimising systems on board vessels as well as offering the potential for better ship-to-shore communication, providing the opportunity for data sharing to perform system updates and preventative maintenance.

Cyber also offers the ability to capture and analyse a wide range of data, including for operational performance monitoring, condition monitoring and control purposes. It can also enable further system optimisation through software updates, helping to future proof some systems

which could be designed from the outset to be adapted and enhanced through algorithms based on accumulated data.

If an activity tracker on your wrist can give you instant feedback and data displaying performance of your vital body functions over time, why not a connected ship supplying critical systems data to their operators, or possibly original equipment manufacturers (OEMs) acting on the operator's behalf, to enable better, safer, operations and performance decisions. From a technology perspective, this is all possible. From a regulatory and perception perspective, the key is demonstrating acceptable safety and cost-effective business performance.

Some of the challenges of cyber-enablement are more obvious than others. Cyber security concerns are obvious, but network performance and bandwidth, sensor and data dependability, software integrity, configuration management and the interface between the human and the cyber-enabled system are all significant challenges to be overcome. Already we see OEM's, builders and owners recognising and addressing these through a wide array of software and hardware solutions in the domain of safety, security, performance management, maintenance and others.



We are already seeing autonomous and semi-autonomous cars on our roads, so how long will it be until we see a fully autonomous ship?

As a trusted provider of safety assurance to the marine industry, we are ready to help all stakeholders in the cyber-enabled ship market ensure that information and communications technology is installed safely. LR has pioneered guidance in this field detailing progressive levels of automation – from off-ship decision support through remote control of on-board systems to the potentially unmanned and autonomously controlled vessel – and the issues to be recognised and addressed by all stakeholders from the very outset of any project.

This guidance, the result of detailed work and consultation with industry, regulators and academia, provides a framework to address the safety and practical issues required to meet classification, regulatory and market requirements.

Find out more at
<http://info.lr.org/gr2016-cybership>

The alignment has also resulted in us securing the class work for a significant proportion of the very few active offshore new build projects globally.

Future of the industry

The current cyclical downturn is an important opportunity for us to be ready for what is coming next and we have been doing a lot of work to map the future of the industry. The landscape is changing fast, in many new directions with many new developments, and there is an increasing need for us to be the confident partner to assist clients in navigating the evolving operating environment. For example, our global marine trends 2030 series of reports, detailing our strategic research, has provided our stakeholders with insight into the future for maritime trade and fuel trends. Most recently, Global Marine Technology Trends 2030 looked at a broad range of technologies that will drive change.

We are investing everything in our future while ensuring we can address the challenges of today, supporting clients with their immediate business needs. This approach has redefined the role and scope of class and we see that our competitors are now following our lead.

Our approach provides the right environment coupled with the access to academic and research capability that is needed. For example, we are now playing a leading role in assuring the safe deployment of hybrid technology.

We also brought together our experienced technology leaders with an investment in new talent and – importantly – worked in collaboration with scientists at the University of Southampton, across the campus from our new Global Technology Centre (GTC), on our Guidance notes for large battery installations.

This investment in technology and capability will continue, as we continue to make sense of the future for the marine and offshore sectors. While it is certain that another year of challenge lies ahead, where there is challenge there is also opportunity, and we see this coming from leveraging our wealth of experience with innovation. 2017 could be a landmark year in the regulatory and innovation landscape, with the implementation of the IMO Ballast Water Management Convention and global sulphur cap on fuel driving greater interest in a wider variety of fuels and energy sources. We remain focused on minimising the safety and environmental risk of our client's operations in line with optimising operational effectiveness to maximise competitive advantage.

Nick Brown
 Marine & Offshore Director

Unique ferry achieves energy efficient design goals

Royal NV Texels Eigen Stoomboot Onderneming (TESO) wanted to build a unique energy efficient ferry with an advanced energy management system. LR provided both endorsement and support in bringing together state-of-the-art technology to ensure success in achieving these design goals.

The ferry, *Texelstroom*, was delivered in June 2016, a 1,750 passenger, 350 vehicle, double-ended ferry that will operate between the Dutch islands of Texel and

Den Helder. She uniquely combines the innovative use of several different energy sources to provide reliable, efficient power and vastly reduced environmental impact in comparison with existing ferry technology. She operates mainly on natural gas; electric batteries also form an integral part of the advanced energy management system and the ability to run solely on diesel. In addition, with over 700m² of solar panels, the ferry has power available from the sun.

As well as a unique powering capability, the design has several other features that are significant for ferries operating in the north European region. The vessel is Ice Class, with a strengthened hull to safely navigate icy waters. It also has LR's passenger and crew accommodation comfort notation, ensuring a safe and comfortable journey for passengers and crew.

Find out more at
<http://info.lr.org/gr2016-texelstroom>



“ I am confident that with LR's background knowledge of the TESO philosophy, that safety and reliability are the most important goals to achieve, in addition to the long standing good relationship between both sides, TESO has again chosen LR to be their classification society.

Cees de Waal, Managing Director TESO

When FLNG designs outlive their designers

Our white paper, When designs outlive their designers, looks at the question – what will offshore engineering be like in the future. With the pace of technology development, will we be using anything we see around us now in 50 years' time?

Offshore FLNG units are being designed for service lives of up to 50 years. This introduces greater risks, challenges and uncertainties that the conventional oil and gas and marine industries have not seen before. It will also mean that these units may outlive their designers.

A design decision taken today which meets current requirements may easily underestimate future requirements and expectations.

Our paper aims to describe possible strategies to overcome these risks, which crucially may not become apparent until many years after the asset has been commissioned. It also explores how lessons learnt from ageing assets operating in the UK North Sea, an area not currently associated with FLNG, can be deployed to benefit FLNG projects elsewhere around the world.

Download the white paper at
<http://info.lr.org/gr2016-flng-design>



Image courtesy of the Port of London Authority

LR class £7 million river maintenance vessel for PLA

The Port of London Authority's (PLA) *London Titan* has been built to work on the River Thames. Her main responsibilities include keeping the river clear of obstructions and channels clearly marked. We were involved with the construction from design concept through the build process to the vessel entering full LR class.



An LR surveyor in the drydock basin at Lisnave, Portugal, one of the largest ship repair facilities in the world.

Classification of conversion to Royal Canadian Navy AOR

Project Resolve is the conversion of the container vessel *MV Asterix* to an auxiliary oiler replenishment (AOR) ship. This will support the Royal Canadian Navy's interim supply ship capability requirements. Our naval technology expertise and experience of complex conversions will provide key support to the project to help ensure that the end result is a safe, reliable AOR ship that is fit for purpose.

We will support the conversion process from the development of a safety certification regime with the flag administration and approval of design plans through to on-site supervision at the Chantier Davie Canada shipyard and commissioning of the new AOR ship.

Find out more at <http://info.lr.org/gr2016-aor>



“ We are very pleased to extend our long-standing relationship with Lloyd's Register with the award of this contract. Lloyd's Register, globally, is the preferred classification society for naval vessels and their blend of experience in commercial and naval ships as well as with ship conversions is invaluable for this innovative and dynamic program.

Alan Bowen, CEO of Davie



EU certification projects for ship recycling facilities

LR's Marine & Offshore and LRQA businesses collaborated to lead the way in global ship recycling. We have completed the world's first IMO Hong Kong Convention, EU Ship Recycling Regulation and ISRA (International Ship Recycling Association) membership certification projects for five recycling facilities in Turkey and two in China.

This project results from many years of relationship building with recycling facilities and industry bodies, such as ISRA, and has been an excellent example of cross-stream collaboration within LR.

LR's UK Ship Recycling Section worked with colleagues in environment and sustainability and surveyors, auditors and client managers in Istanbul and Shanghai to deliver advice and support to achieve certification within a very tight timescale. This collaboration utilised LR expertise on a wide range of ship recycling activities and is a clear example of our adaptability, responsiveness and professionalism.

In another project the UK Ship Recycling Section and Mumbai office provided support to Maersk and recycling facilities in Alang, India. Desktop reviews and on-site inspections of four recycling facilities were carried out, followed by final surveys and issuance of Ready for Recycling certification for two Maersk Line vessels. A comprehensive nine-month audit of recycling of both vessels is expected to be completed by May 2017.

LR is providing a service that will improve the ship recycling industry, drive higher standards and help to differentiate the better facilities from those with unacceptably poor working practices.

“ By providing certification against the highest published standards at the world's leading facilities and by offering hands-on support to drive further improvements, LR is genuinely working towards a safer world.

Jim Heath

LR's Principal Ship Recycling Specialist

Find out more at <http://info.lr.org/gr2016-recycling>



Energy review

Supporting our clients through the complexity of today's and tomorrow's market challenges



Challenging market conditions across the oil and gas sector have had a significant impact on the performance of our Energy business. With revenues across the sector dropping by as much as 60% in two years, clients are deferring or cancelling projects and restructuring their businesses.

We are not immune to this downward pressure and have transformed our own business to ensure we provide the right level of competitive, technical support in these uncertain times. For example, our new diversification strategy has been designed to support the sector in meeting today's economic and operational challenges while developing tomorrow's safer and sustainable energy supply.

The strategy has already achieved significant positive momentum, operationally and financially. We are increasingly focused on providing support to clients transitioning from the traditional oil and gas market into low carbon energy. This shift is creating increasing need for assurance around the design and commercialisation of new technologies – such as the miniaturisation of small modular reactors and China's first-of-a-kind floating nuclear vessel. These developments, coupled with the rapidly falling cost of renewables and the arrival of ground-breaking manufacturing technologies for sustainable energy applications, are helping us create a new space for our business.

Breadth of services

The synergies between companies we have acquired in recent years (the latest being LR Senenergy, now fully integrated into LR) gives us an industry-leading position from which to add technical value for our clients. The range of projects we can deliver demonstrates the breadth of services we can now provide. These range from conducting a review

lasting days to multi-year, integrated projects that span the whole energy cycle – from exploration and appraisal through to the preparation of a complete field development plan and its implementation. This, in particular, appealed to the UK's Oil and Gas Authority which chose our technical expertise and productivity strategies to help maximise the economic recovery of the UK's oil and gas reserves.

We believe smart innovation is critical to producing clean, sustainable energy, with technical, collaborative innovation being an essential part of the industry's – and our own – future. We are driving the development of new concepts and technologies through collaborative research and development to benefit clients and society. Examples in the year included LR's new initiative with TWI which resulted in the launch of a global certification framework to deliver safety and consistency in additive manufacturing.

Our technology 'know-how' has led to the launch of our market-leading asset optimisation software Axxim™ which we developed to address the operational challenges faced by oil and gas operators, chemical, power and other asset-intensive industries. It is a single resource to identify critical assets, and it can increase uptime by at least 20%, reduce failure risk by 80%, and optimise inspection and maintenance to achieve costs savings of up to 50%.

New guidance and standards

Our new guidance on the safe and effective deployment of next generation drones and unmanned aircraft systems opens the way to rapid, safe and repeatable inspections that can significantly improve productivity gains through reducing risk exposure, survey times and in-service inspection costs of offshore and onshore infrastructure.

We have also embarked on a collaborative approach to bring governments and industry together to produce a universally recognised standard for the safe, sustainable extraction and supply of shale gas and oil. The creation of a global assessment framework will, for the first time, provide risk management for



We believe smart innovation is critical to producing clean, sustainable energy, with technical, collaborative innovation being an essential part of the industry's – and our own – future.

2016 key highlights

- Our increasing focus on providing support to clients transitioning from the traditional oil and gas market into low carbon energy.
- Launch of Axxim™ – increases uptime by at least 20%, reduces failure risk by 80%, and optimises inspection and maintenance to achieve costs savings of up to 50%.

The innovation imperative

Our 2015/16 Technology Radar survey of 450 oil and gas executives worldwide, highlighted operational efficiency as the top driver for innovation investment – even ahead of safety, which topped the list in the 2014/15 survey.

This is unsurprising. When we have seen businesses exhaust all the options to take out cost, technology is the only thing that can make quantum leaps in cost reduction. In addition to nudging down the bottom line, companies are also seeking to push up the top line by extracting maximum value from resources. Improving access to potential reserves and increasing the life span of assets also rated more highly this year than in the past.

In terms of technology, investment priorities included enhanced oil recovery, unmanned aerial vehicles, and the standardisation of oil fields.

But many companies only look to deploy new technologies when they are proven and that has been a barrier until now. Our new technology qualification (TQ) process is a goal-based approach to risk.

TQ has a major role to play in relatively young and unproven components, processes or systems which lack historical data, and we see demand for this service increasing. For example, it has allowed

AW-Energy – a Finnish manufacturer of near-shore wave energy – to identify and mitigate risks and weaknesses in its design and qualification of its WaveRoller® technology for commercial use.

And what about collaboration?

Successful companies are already aware of the gains that can be made by partnership with third parties, and we are noticing an uplift in joint efforts.

For example, our experts were contracted by the University of Twente in the Netherlands to explore how numerical modelling can be utilised to analyse turbine problems. This was done in collaboration with GE Oil & Gas which provided data on the design and operation of turbines.

New technologies

There is growing acceptance that the sector's future will be driven in part by technologies developed in other industries. Examples include imaging technologies, advanced lightweight and corrosion-resistant materials, remote inspection, nano-technologies, data mapping, advanced data analytics, cardiovascular-type pump technologies, additive manufacturing, underwater autonomous vehicles, sensors, super insulation and carbon fibre.

Upstream companies are already looking into the composite materials developed by the aerospace industry, because they are light, durable and corrosion resistant, as well as sensors for data transmission. But many other industries offer potential, including biomedical, ICT/gaming and automotive.



There is growing acceptance that the sector's future will be driven in part by technologies developed in other industries.

Adding value

While the challenge of operating ageing assets is impacting the industry in regions including the North Sea and the Gulf of Mexico, the oil and gas industry is not alone in experiencing these challenges. Mature operating assets make up 70% of the world's energy production infrastructure. We are heavily engaged with operators in providing detailed insight into their inspection, safety, and materials engineering issues to safely reduce costs. This could be by eliminating unnecessary maintenance activities, identifying new levels of acceptable risk and realigning operating models.

We have also seen significant progress this year in the area of decommissioning from safe and cost-effective well plug and abandonment to full decommissioning of offshore installations. We recently took over the reservoir and production management of two central North Sea fields and showed that a smooth transition is both possible and beneficial for the operator in terms of reducing costs.

the entire operational lifecycle. Such clarity is important across upcoming energy sources where the expectations of operators vary and compliance with international standards is often optional. In addition, new energy tends to attract new companies that might have less experience of operating in high risk areas and could benefit from all available technical support.

During the year we funded PhD positions at universities in Singapore and Glasgow as part of our commitment to delivering a fully-coupled model for floating offshore wind applications. These projects complement our previous design certification and consultancy work with Ideol and Statoil.

And our series of exclusive networking events culminated in Iran where we held an event which brought together 130 senior oil and gas executives from around the world. We are committed to helping the Iranian oil and gas industry optimise

its operations. We believe it is critical to enhance the competence of the Iranian workforce by transferring our knowledge of new technology and its application, and of international standards.

In all areas of the energy mix, throughout the supply chain and across the globe, we will continue to support our clients through the complexity of tomorrow's market challenges, providing the technical assurance they will need for improved business performance as we develop new energy sources.

Alasdair Buchanan
Energy Director



Our new guidance on the safe and effective deployment of next generation drones and unmanned aircraft systems opens the way to rapid, safe and repeatable inspections that can significantly improve productivity gains through reducing risk exposure, survey times and in-service inspection costs of offshore and onshore infrastructure.

Ensuring safety of power converter platform installation in North Sea

Converter platforms enable the power produced from several offshore wind farms to connect to the grid, by converting the AC power from the wind farms to DC and transmitting it to the shore. TenneT, a leading European electricity transmission system operator with activities in the Netherlands and Germany, has commissioned a series of HVDC (high-voltage, direct current) converter offshore platforms in the North Sea.

The converter platform BorWin gamma will be one of the world's heaviest and largest HVDC platforms. It is scheduled to go online in 2019.

TenneT appointed LR as the independent, third party, certifying authority for the project. In this role, LR is evaluating and certifying the project, including the design, construction, transport and installation, and commissioning – helping to ensure compliance with key standards.

Siemens and Petrofac are contracted by TenneT to design, build and install the platform. The topsides will be fully fabricated, assembled, integrated and tested for preliminary pre-commissioning conditions on-shore and transported to the offshore location.

Our early involvement in the project has helped to reduce risks and costs. During the design development phase, qualified reports were examined by our technical experts, with the main aim of minimising risk by eliminating potential errors early on in the process. Finding errors further down the line would have greatly increased costs.

Find out more at <http://info.lr.org/gr2016-tennet>



Maintaining and certifying the integrity of pipeline infrastructure

In 2015, the American Petroleum Institute (API) published a class-leading standard for pipeline operators to demonstrate their commitment to safe working practices, API RP 1173 Pipe Safety Management Systems. This standard provides a framework to identify and address safety concerns for a pipeline system's entire lifecycle.

Pacific Gas and Electric Company (PG&E), one of the US's largest combined natural gas and electric utilities, has worked hard to implement a robust safety management system. The company turned to LR to perform a gap analysis and compliance assessment against the requirements of the new standard.

We have a long standing relationship with PG&E and previously certified it to PAS 55 and ISO 55001, the international standards for asset management systems. API RP 1173 is similar to these standards but has a stronger focus on pipeline management. We provided an independent assessment of PG&E's pipeline safety management systems. Our experienced team of engineers

reviewed the procedures and processes PG&E has in place to manage their pipeline infrastructure. Our review involved an in-depth assessment of the gas transmission integrity management programme (TIMP) and gas distribution integrity management programme (DIMP) required by US federal regulations.

We provided PG&E increased confidence in their DIMP and TIMP programmes and its pipeline safety management system. We also gave PG&E recommendations on best practices and areas of focus for continual improvement to help the client meet its objective of achieving world class safety.

Find out more at <http://info.lr.org/gr2016-pge>

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The recognition and validation of compliance with the API standards by Lloyd's Register demonstrates that we are working in the right way and we are determined to make even more strides towards world-class safety performance.

Nick Stavropoulos
PG&E President

40,000

miles of distribution pipeline

6,750

miles of transmission pipelines

Facilitating decision-making for nuclear emergency management

The Fukushima disaster highlighted the need for improving accident diagnosis tools and forecasting likely scenarios. Recognising this, in 2015 LR partnered with the Swedish Radiation Safety Authority (SSM) to enhance the prediction software RASTEP, a diagnostic tool, to optimise the decision-making process for emergency planning and response personnel in the nuclear industry.

RASTEP (RAPid Source TErM Prediction) is designed to aid decision-making during accidents at nuclear power plants. It helps operators understand the likelihood of particular issues occurring given a set of conditions. This output is essential for an operator's offsite emergency response planning process.

By improving the way the questions are organised and the detail in the graphical illustrations, the interface provides better clarity on decision making for nuclear operators. It helps to inform on predicted or likely consequences, which will provide improved offsite emergency response initiatives for industry and better protect the public.

Find out more at <http://info.lr.org/gr2016-rastep>

LR has supported the safe and efficient growth of the global nuclear energy sector since the industry's very beginning.

With our extensive safety, licensing and regulatory expertise, we support facility owners, operators, vendors and national regulators worldwide. Our teams have extensive experience of providing specialist techniques covering the entire lifecycle.



We have a long and fruitful experience working with Lloyd's Register to achieve a tool that will allow quicker and more efficient emergency management at SSM in case of a nuclear accident. In an emergency situation, SSM's advice is important for decision makers at the county administrative boards which decide on the right measures to protect the population.

Annelie Bergman

Head of Section, Reactor Technology and Analysis at SSM



Achieving savings through bespoke well delivery process

VietGazprom (a joint operating company of Petrovietnam and Gazprom) is developing oil and gas blocks in the South China Sea. This area has high operational risks due to location, supply chain and logistics. Blocks Nos. 129–132 cover a total area of 28,400 square kilometres. Their initial hydrocarbon resources are estimated at 700 million tons of fuel equivalent.

At the time of the project start up, VietGazprom had no well delivery process or procedure in place. The company required the development of a set of procedures and policies to meet its requirements and obligations with the Vietnamese governing body legislations.

LR developed a bespoke well delivery process for the drilling of two deepwater wells, the first deepwater wells drilled by

this consortium. Our project management process delivered a high quality performance: both wells were safely and successfully drilled, evaluated and abandoned under budget and ahead of schedule; operations were conducted with zero incidents, zero accidents, and zero environmental issues; only three hours' non-productive time of the drilling rig were recorded in 68 days of operations on the first well; there was under 6% non-productive time over the whole campaign duration with no delays over logistics, materials or personnel.

Find out more at <http://info.lr.org/gr2016-vietgazprom>



JOC (VietGazprom) is grateful for the excellent professional work performed by a tightknit team of LR experienced specialists.

Director of VietGazprom



<6%_{NPT}

50_{days}

total time saving over both wells

\$40m

total cost saving over both wells



Management Systems & Inspection Services review

Client focus, collaboration and innovation



In 2015/16, the market continued to be dominated by the revisions to all of the world's leading ISO management system standards, which began with the publication in September 2015 of ISO 9001:2015 (quality) and ISO 14001:2015 (environmental).

During the period, LRQA has led the market in the delivery of innovative assessment and training services, helping organisations transition to the revised standards. Early adoption has been a clear message as we see clients reaping the benefits that the revisions deliver in terms of providing compliance, assurance and performance.

LRQA is the first assurance provider to be awarded global accreditation by the United Kingdom Accreditation Service (UKAS) for assessment services against the revised ISO management system standards.

Client focus

Our commitment to delivering value-added assurance services to the thousands of clients we serve worldwide has been strengthened during the year by the joining of Inspection Services from the Energy division. In parallel, we have continued to widen our offer during the period to include client specific business improvement training and assurance services, applicable to any organisation – irrespective of their size or geographical location.

The joining of Inspection Services means that we are increasingly working cross-stream as clients and prospects alike reap the benefits from our expanded service offer. Cross-stream projects with LR's Energy division have seen us working with clients including Heathrow Airport Limited, which achieved certification to the international asset management system standard ISO 55001 in March 2016.

Staying with Inspection Services, the Indian government approved LR as the first independent organisation to inspect and certify boilers across the country on its behalf. In South Korea, we expanded our nuclear inspection services with the approval for two key Korean nuclear construction codes, helping achieve our mission to work together for a safer world. In Italy we launched our second annual Pressure Equipment Forum, facilitating knowledge sharing among pressure vessel manufacturers, a forum similar to our ongoing Pressure Vessel Manufacturers Forum in the UK.

LRQA has also collaborated with the Marine & Offshore department during the period, specifically with the delivery of verification services against the recent monitoring, reporting and verification of CO₂ emissions guidance for the marine sector.

We have also worked with Marine & Offshore to complete the world's first IMO Hong Kong Convention, EU Ship Recycling Regulation and ISRA (International Ship Recycling Association) membership certification projects for seven recycling facilities in Turkey and China, as featured on page 19.

Our commitment to client value continues with the rollout of our new enterprise resource planning platform, BOS. This business operating system will not only deliver greater efficiencies for LRQA, but it will also ensure a more positive client experience.

Collaboration

In January 2016, we announced our membership of the Consumer Goods Forum (CGF), a significant step in developing our food services portfolio beyond food safety into health and wellness, supply chain sustainability and end-to-end value chain underpinned with technology. This will allow us to build on our relationship with the CGF's Global Food Safety Initiative (GFSI) to extend our reach across the food sector as a whole.



LRQA is the first assurance provider to be awarded global accreditation by the United Kingdom Accreditation Service (UKAS) for assessment services against the revised ISO management system standards.

2016 key highlights

- The joining of Inspection Services from the Energy division.
- LRQA becomes a member of the Consumer Goods Forum (CGF).
- Announcement of our adoption of the greenfence™ platform - the food industry's first remote auditing and certification platform.

The changing face of assurance within a digital landscape

Over the past few years, there has been a steady rise in the use of technology within the assurance arena.

Organisations worldwide are proclaiming their commitment to having a strategic focus on being technologically enabled and agile. This means that assurance providers are at the forefront of embracing new technologies such as LR's announcement in June of the adoption of the greenfence™ platform technology to facilitate the development of digital assurance services.

In the digital economy, platform ecosystems are nothing less than the foundation for new value creation. They offer unrivalled potential for connectability, scalability and interoperability of existing databases, schemes and systems and also for the future development and enhancement of assurance services across all industry sectors.

This changing face of assurance means that as we move forward, we will see the blending of conventional assessment with digital monitoring and audit solutions that will enable the delivery

of real-time assurance and insight, moving from a retrospective focus to predictive insight, from what went wrong to what could go wrong. This is expected to have a disruptive effect on traditional testing, inspection and certification business models, which in turn also presents opportunities – hence LR's decision to take an early adopter position.

There are also new approaches to traditional services for the benefit of organisations worldwide, who are often faced with a range of complex supply chain challenges. As a result, there are new methods emerging to address these. Clients in conflict zones and in regions where access is difficult including Iraq and Afghanistan, have already benefited from remote audits, delivered through online technologies, with procedures reviewed and approved by UKAS. We look at an example of a remote audit on page 27.

Remote inspection technologies such as drones and robotics are becoming a reality to enable data to be gathered remotely from sites.

The focus on digital technology continues with additive manufacturing (AM). Spanning a range of sectors from pharmaceuticals to

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Platform ecosystems... offer unrivalled potential for connectability, scalability and interoperability of existing databases, schemes and systems and also for the future development and enhancement of assurance services across all industry sectors.

aerospace, AM is being hailed as the next industrial revolution due to its ability to create complex, precision parts with an overall reduction in resource usage and weight. However, printing metal parts consistently is proving a challenge, as is proving the integrity of those parts for safety-critical applications. This is why LR this year applied its deep experience around certification of materials and equipment by launching a framework for manufacturers who would like their printed components certified by LR.

Within the sustainability arena, LRQA formalised the relationship with the CDP verification partnership programme in April 2016 for another three years. CDP works to transform the way the world does business to prevent dangerous climate change and protect natural resources, using the power of measurement and information disclosure to improve the management of environmental risk.

LRQA's range of services within this arena will help organisations make the direct link between climate change, CSR and their bottom line. As a result, we continue to collaborate with the Lloyd's Register Foundation, particularly in relation to resilience engineering within the food sector. Further, LRQA continues to participate in many ISO technical committees as a member of the Independent International Organisation for Certification (IIOC).

Within Inspection Services, our manufacturing services specialists helped the global pressure equipment industry understand some significant changes to widely used standards and regulations. The new version of the American Society

of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code took effect in 2016. LR's experienced ASME Authorised Inspectors released summaries of the changes for clients and held several technical seminars worldwide about the changes.

LR's pressure equipment experts also made sure our clients and the industry at large understood the changes surrounding Europe's new Pressure Equipment Directive, which took effect in 2016. Through a series of articles, apps and infographics, LR's proactive effort to educate helped ease the transition for many companies.

Innovation

In June 2016, we announced our adoption of the greenfence™ platform – the food industry's first remote auditing and certification platform. This demonstrates our commitment to investing for the future, through technology-enabled services that deliver more value to clients. Although initially focused on the food sector, we will also explore opportunities in other LR markets to provide a range of platform economy services for supply chains powered by the greenfence™ technology.

Within Inspection Services, we are focusing on additive manufacturing (AM) or 3D printing. In this area we see several cross-stream opportunities within the assurance market, particularly in the manufacturing sector, to include the medical device arena.

With regards to our training services, we listen to the market when developing courseware. This approach ensures that we continue to deliver training services – which are often tailored – that not only reflect changing market and organisational requirements but can also be delivered as e-learning modules.

Our position within LR has been strengthened through the addition of Inspection Services, combined with our commitment to investing in new technologies to deliver value added services to the market. As we move into 2017, we do so with the right structure, service line, technical expertise and skill set to ensure continued growth for LRQA and Inspection Services.

John Rowley
Management Systems &
Inspection Services Director



For us, the main objective of ISO 9001:2015 is to provide confidence in our organisation's ability to consistently provide customers with conforming products and services, as well as to enhance customer satisfaction.

Charlie Kok
Managing Director,
Schenker Singapore

Transition success for DB Schenker

Top transport and logistics provider DB Schenker began their ISO 9001 journey in 1993 and adopted a proactive approach towards transitioning to the new ISO 9001:2015 standard. On 23 October 2015, Schenker Singapore successfully completed the transition audit and was the first organisation in Singapore to be certified by LRQA to the revised standard – a significant achievement given that the standard itself was only published on 15 September.

Schenker Singapore believes that this successful transition to ISO 9001:2015 provides it with a competitive edge to current and potential clients as well as transparently demonstrating their commitment to quality and excellence through continual improvement.

Transition planning commenced in February 2015 when DB Schenker approached LRQA to discuss ways in

which the transition programme could commence to ensure a robust and positive approach to support the organisation's commitment to continual quality improvement. LRQA's range of transition services, sector specific technical experts and a client-centric approach helped focus on areas that are applicable to Schenker Singapore's business environment. This enabled LRQA to deliver insight and assessment into Schenker Singapore's systems to help them achieve a smooth transition to ISO 9001:2015.

LRQA is one of the first certification bodies to be awarded global accreditation by UKAS for ISO 9001:2015. LRQA is also the first certification body to be awarded accreditation by the Singapore Accreditation Council.

Find out more at
<http://info.lr.org/gr2016-schenker>



Quality inspection for the world's largest wastewater plant

The Atotonilco plant is designed to treat wastewater of one of the world's most populated areas: Mexico City, a city of more than 10 million people. Construction of the USD\$786 million plant was an enormous logistical challenge. The planners had to co-ordinate high volumes of materials coming from around the world. Also, controlling the manufacture and shipment of heavy equipment from global manufacturing sites was a key concern.

With more than 30 years' experience in specialised inspection services to the wastewater treatment industry, we have developed a full set of requirements and criteria for all types of water management installations. We produced a manual of inspection procedures for Atotonilco. Our procedures help the client minimise the cost of their supply chain by providing a schedule of global certification tailored to its needs.

SAHM, the consortium of companies formed to construct and operate the plant, also benefited from our extensive network of international resources. LR carried out more than 100 inspections in nine different countries. We provided independent certification of key electromechanical equipment for the plant, with inspection and witnessing of tests during fabrication and packaging, as well as monitoring deadlines for delivery.

Find out more at <http://info.lr.org/gr2016-atotonilco>



We highlight the management of inspections by Lloyd's Register for all supplies purchased internationally, in particular large equipment, due to the size of the project and its high flow rates. It was very important that the co-ordination achieved between the LR and SAHM consortium teams meet time and quality standards required in Atotonilco. Lloyd's Register's team exceeded these expectations and through their co-ordination helped keep the project on track.

Elena Cabeza del Pozo,
Supplies Manager at PTAR Atotonilco.

Robust system to manage inspection and compliance for TANATEX Chemicals

In the world of chemical processing, ensuring manufacturing assets are inspected and in compliance with the law is a challenge that has both legal and safety ramifications.

TANATEX Chemicals' had developed a comprehensive inspection and compliance system but it was stand-alone and relied on the knowledge of one person. LR was asked to assess the cataloguing system and report on risks or gaps. TANATEX wanted to go beyond compliance and make sure they were not taking unnecessary risks.

The Netherlands-based TANATEX, manufacturer of chemicals for the textile industry, falls under the BRZO, a Dutch regulation for companies whose industrial accidents could pose a major risk to the community. Because of this, keeping maintenance and inspection documentation in order is a vital issue.

We worked with TANATEX to develop a compliance process with a database that could be accessed by several areas of its business, as well as by LR surveyors and other third-parties. The new database also delivered other benefits of new efficiencies internally and for their customers.

Find out more at <http://info.lr.org/gr2016-tanatex>



After the sessions with Lloyd's Register, we have gained more insight into regulatory and classification of equipment... It is ultimately important for regulators to have your answer ready and to have control over what we do. We now have more than enough of that and that gives us confidence.

Jim Casey
TANATEX Chemicals Maintenance Manager



The increased focus on risks and KPIs in ISO 9001:2015 makes it more of a business tool. This is especially helpful in the current economic climate.

Lars Seistrup, Managing Director, Albwardy Damen



We chose to work with LRQA due to its professional approach and its reputation among our clients.

Oğuz Baş
Group QHSE Director, AMM

Remote audit in Iraq: driving client value with technology

To meet the needs of clients working in challenging circumstances, where it is not possible for an assessor to access the site, LRQA has developed new processes and procedures to conduct a remote audit using computer assisted auditing techniques (CAAT).

Alak Misk & Misnaf (AMM) is the first company to have had a remote audit with LRQA for ISO 9001, ISO 14001, and OHSAS 18001 (occupational health and safety). The company provides project logistics and port operations services to oil, gas and energy projects at various locations across Iraq. Maintaining certification is a key part of AMM's strategy to align its operations and vision to achieve the utmost customer satisfaction aligned with local and international rules and regulations. As part of an international group, independent third party certification of their management systems helps to meet the needs of their stakeholders and to ensure continual improvement.

With procedures reviewed and approved by UKAS, LRQA's new approaches to traditional assurance services help organisations worldwide. Clients in conflict zones and where access is difficult have already benefited from remote audits.

Find out more at www.lrqa.com

Chief Financial Officer's report

Performance impacted by market factors – new strategy is key

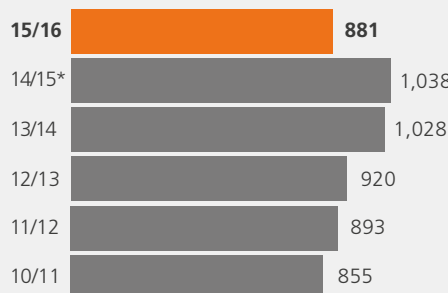


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Year on year we are increasing our investment in our new strategy, in our people and in new technology platforms that will improve our client interfaces and improve productivity.

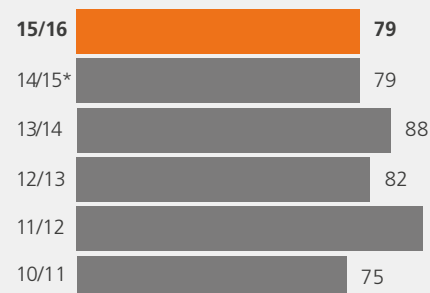
Turnover £m

£881m



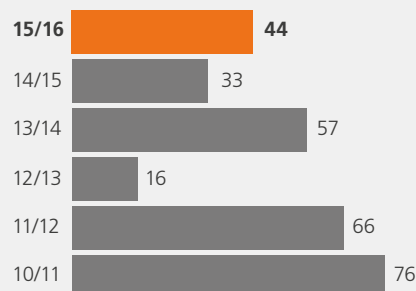
Normalised operating profit £m

£79m



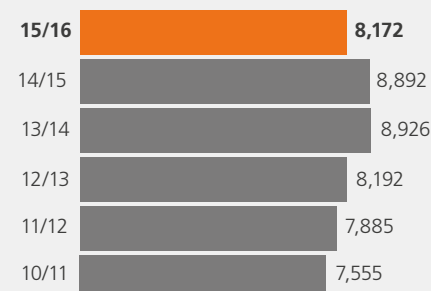
Operating cash flow £m

£44m



Average headcount

8,172



* 14/15 restated for FRS102 and excluding transportation

I would like to comment on selected key numbers from Lloyd's Register Group Limited's annual report and consolidated financial statements for the year ended 30 June 2016.

The financial performance for the group has continued to be impacted by the macroeconomics factors affecting our energy clients. The continuing low oil price has resulted in investment decisions being deferred and continued pressures to reduce costs across the sector. After a number of years of peak production in commercial shipping the anticipated slowdown in new construction is now in evidence. Despite the benefits of low oil prices the global economic outlook remains subdued reflecting increased levels of uncertainty, including the political environment.

The consequences of the UK vote to leave the EU are yet to be felt other than the impacts seen in the financial markets in reducing bond yields and weakening sterling. As the process of exiting from the EU commences this is likely to give rise to further challenges but may also lead to new opportunities.

In this challenging marketplace our new strategy is key to ensuring the group is well placed to take full advantage in the significant changes in our industry and ensure LR remains well positioned for the future.

As reported last year, on the 1 July 2015 LR acquired the remaining 45% shareholding in Senenergy Group Limited and also on that day completed the sale of its rail business to Ricardo plc.

Turnover

Total group turnover for the year was £0.9 billion (2015: £1.04 billion). This reduction was in part due to the sale of the rail business; on a like for like basis and adjusted for exchange differences revenue decreased by 11%.

Despite the challenging marketplace the Marine and Management Systems businesses saw revenue broadly in line with the prior year. The year on year decrease in group turnover was attributable to the Energy business in particular those elements most closely connected to the oil and gas sector. Our energy clients have reduced their levels of investment and continue to drive down costs. We continue to support our clients with high level technical advice to help them to safely improve operating performance while adjusting our own cost base to reflect the reduced activity levels and these price pressures.

Operating profit

For the year ended June 2016 the group has prepared its financial statements under FRS102, and the prior year has been restated. The operating profit after restructuring costs and impairments was £34 million (2015: £35 million excluding the rail performance). The operating profit for 2016 is impacted by some significant one off events, a goodwill impairment of £25 million and the profit on the sale of the rail business of £28 million. It also includes restructuring costs of £22 million (2015: £24 million). It should be noted that under FRS102 there are capitalised development costs of £16 million (2015: £2 million). With the significant continued decline in the energy market we have sought to adjust our cost base accordingly while maintaining investment for the longer term. We have continued to invest in information technology-led projects to improve long term productivity as well as establishing an Asian shared service centre and investing in our data and digital strategy.

Our normalised operating profit, adjusting for restructuring costs, foreign exchange gains and losses and defined benefit pension costs, was £79 million for the year (2015: £79 million). The normalised operating profit has been held in line with prior year despite the fall in turnover as a consequence of strong cost controls and efficiencies, while continuing to invest for the future.

Profit before tax

The group has reported profit before tax of £78 million for the year (2015: £67 million). Included in this £78 million is £38 million of fair value gains from property and listed investments.

Our profits are used to support the charitable activities of the Lloyd's Register Foundation by investing back into the operating company for future growth and through direct funding to the Foundation. Our donations to the Lloyd's Register Foundation were £20 million (2015: £11 million).

Operating cash flow

The operating cash flow for the year was £44 million (2015: £33 million) with the increase from prior year driven by improvements in underlying working capital performance and the foreign exchange gains created from the weakening of sterling at the 30 June 2016.

Other significant non-operating cash flows arose from the sale of the rail business, purchase of the remaining equity in Senenergy Group Limited, acquisition of intangible assets relating to software and cash flows generated by the sale and purchase of investments.

Headcount

The average headcount for 2015/16 was 8,172 employees, 8% lower than prior year. The reduction reflected the employees who left the group as a consequence of the sale of the rail business and reduced headcount in the Energy business to adjust to market conditions. This restructuring continued throughout the year and headcount as at 30 June 2016 stood at 7,903. As the reduction in headcount has lagged the falling activity levels in the Energy sector the turnover per employee has fallen to approximately £108,000, an 8% fall on prior year.

Conclusion

This year has been one of the most challenging the group has faced in a number of years. Activity levels in the energy market have continued to fall throughout the year and we have sought to restructure our business to a sustainable level. Despite the market impact on turnover we have maintained our normalised operating profit and improved operating cash flows enabling us to increase the donation to the Lloyd's Register Foundation.

We continue to plan and invest for the future. Year on year we are increasing our investment in our new strategy, in our people and in new technology platforms that will improve our client interfaces and improve productivity.

The current global economic environment is likely to continue for the foreseeable future. This will drive innovation into the marketplace and attract new entrants bringing disruptive technologies. Despite this background we continue to look forward with confidence as our new strategy is fully aligned to address these challenges to ensure the long term success for the group.

Mary Waldner

Chief Financial Officer

Protecting our world

Public benefit

Lloyd's Register helps to protect life and property and support education and engineering-related research.

By helping our clients ensure the quality construction and operation of critical infrastructure, our services directly fulfil one of the Lloyd's Register Foundation's (our charitable arm) objectives – to enhance the safety of life and property. We contribute to public education by making our research publicly available, and our highly qualified experts share their knowledge and experience with academics, students, regulators and professionals through committees, conferences and publications.

As the commercial entity of Lloyd's Register, LR generates profits that help to fund the whole organisation's public benefit activities.

In addition to providing income to the Foundation the interrelationship with LR also provides an industrial, end-user perspective which helps to inform the Foundation's funding priorities. This ensures all the Foundation's work, even the most fundamental research, has a plausible pathway to impact. LR can also help translate the results and outputs from Foundation-funded work into practice and societal benefit.

The Lloyd's Register Foundation's vision is to be known worldwide as a leading supporter of engineering-related research, training and education. For more see the Foundation's website www.lrfoundation.org.uk.

In 2015/16

New Rules for submersibles and dive systems

Setting classification standards for design, construction and lifetime maintenance of a number of unit types including dive complexes, manned submersibles, dive suits, compression/decompression chambers and hyperbaric rescue/transfer systems.

Design and construction standards for the use of low-flashpoint fuels (LFPF)

New notation provides clarity and helps to ensure technology can be adopted effectively.



LRQA takes centre stage at Paris COP21 Climate Change Conference

In December 2015 Vincent Doumeizel, LRQA's Strategic Marketing Manager, spoke on foodsystems' resilience linked to climate change. "The footprint of the global food supply chain has a direct impact on climate change, with water conservation, food security and the transportation of foodstuffs around the world... We are increasingly seeing our clients making a direct link between climate change, corporate social responsibility and their financial bottom line."

Machinery safety whitepaper

Every day, all over the globe, people are injured and killed in accidents involving machinery. Our whitepaper looks at the measures required to conform to the Machinery Directive and discusses the two recognised standards for handling functional safety of machinery.



New life-saving appliances pocket checklist app

The LR and UK P&I Club pocket checklist app helps ensure that ship personnel are trained in how to inspect, maintain and operate life-saving equipment, and that equipment is ready for use at all times.

New guidance notes for risk-based analysis: cryogenic spill

Our guidance note applies to any unit where hydrocarbon and refrigerant cryogenic hazards are relevant, and offers special guidelines on how to handle leak scenarios specific to LNG plants.

LRQA advisor for multi-organisation Water, Energy & Food Nexus project

Cranfield University invited LRQA to participate as a board advisor for a research project on innovation within the Water Energy & Food (WEF) Nexus.

Asian Nuclear Power Briefing 2016 in Japan

We presented on how nuclear power can be commercialised sustainably for a new generation of affordable and reliable supply of low-carbon electricity.

Semi-submersible design research

In May 2016, we announced a joint research project with Keppel to enhance semi-submersible designs. Co-funded by the Maritime and Port Authority of Singapore, the project will use LR's wave simulation tool, NewWave, and Keppel's semi-submersible model test data.

Sustainability

We believe that sustainability is fundamental to the LR mission and values.

Our biggest environmental impacts are through the services and expertise that we deliver to our clients. In 2016 a decision was made to develop a more explicit, organised and measureable approach to our sustainability activities and develop a strategy based upon both enhancing the value that we deliver to society through our services and the responsible management of our own operations.

Progress made in 2015/16

There were three key areas of progress made to enhance our environmental performance.

- Transition to ISO 14001:2015 – the certification to the revised ISO standards underpins our efforts to measure, manage and improve our impacts across our value chain.
- Environmental baseline – understanding key environmental metrics enables LR to meet and track improvement objectives.
- Sustainability council established – a sustainability strategy will be developed by the council with 'environment' an important pillar of our broader aspirations.

ISO 14001:2015

Our certification to the revised ISO 14001:2015 was the result of months of collaborative work to ensure the requirements of the revised standards are incorporated into our management system.

The revised standards were publicly released in September 2015. LR achieved certification in less than 11 months through a robust group management system and excellent people to support it.

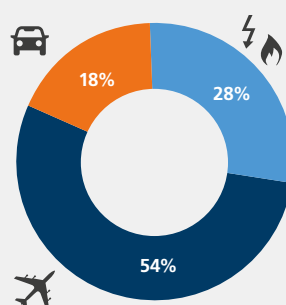
The environment management system (EMS) will now take on a more strategic outlook and consider environmental impacts of our whole value chain, including procurement and our services. The revised standard also strengthens the EMS role in sustainable development and integration with the rest of the business, which will support LR's wider sustainability aspirations. In addition the alignment to revised international standards will further enable the planned integration of the environmental and safety management systems.

Our plans for 2016/17

- Reporting and KPIs – we will establish metrics, KPIs, for our major impacts and work to refine our environmental reporting, aligning to a recognised framework and reduce the proportion of estimated data.
- Environmental best practice – we will introduce an environmental engagement programme to implement standard methods and practical solutions for managing impacts across our operations under an LR 'greening' initiative.
- Sustainability strategy – we will complete our materiality analysis to identify the issues important to both to LR and our stakeholders that will determine what the LR sustainability strategy will focus upon and inform LR's approach to sustainability disclosure.

Environmental performance 2015

2015 was the first year that LR has been able to measure and communicate an environmental footprint of our direct impacts, based on consumption of purchased energy (electricity and gas) in our buildings and from our business travel, as detailed in the table below and the graphic opposite.



Environment		GHG 2015	Objective 2016/17
Scope 1 GHG (tCO₂e)	Fugitive emissions, refrigerants	–	Identification of refrigerants on premises under our control
Scope 2 GHG (tCO₂e)	Purchased energy	11,680	Improve robustness of data and reduce estimation
Scope 3 GHG (tCO₂e)	Employee business travel – Air	22,525	Capture air travel not booked on LR booking system
	Employee business travel – Car	7,450	Improve robustness of data collection
	Waste	–	Measure the recycling rate across LR offices
TOTAL tCO₂e		41,655	

We have applied the greenhouse gas conversion factors contained within the GRI Guidelines and the Defra/DECCs 2014 Conversion Factors.

Billed or metered sources represent the basis of the majority of our data; however 15% of the total purchased energy is calculated on an estimated basis which we believe to be an accurate representation of use.

Currently no data is verified by an external assurance body.

Our people

Our employees are our strength



“

A key element of sharing our expertise in safety is the advice that our field surveyors provide our clients when undertaking their work.

Health and safety

The health, safety and welfare of our employees is our top priority. We are continuously improving our safety programme and over the last five years, the rate of accidents has reduced by 42%.

To help further improve our safety performance and to strengthen our safety culture, in 2016 we introduced a three year strategy. The strategy is founded upon a clear, engaging and challenging aspiration: zero harm to people. Through the programme, the group aims to 'make safety personal' to all employees. We aim to improve the focus on clear visible leadership of safety, strengthen local accountability and define safety-critical behaviours.

The strategy will involve five priority themes to focus on over the next three years:

- **Theme 1:** Develop a stronger HSES (health, safety, environment and security) culture with local accountability of risk and performance.
- **Theme 2:** Embedding simple, robust HSES processes that are locally managed.
- **Theme 3:** Communicating essential HSES messages effectively that engage with workers.
- **Theme 4:** Ensuring a healthy, trained and competent workforce.
- **Theme 5:** Develop a group sustainability strategy with environmental standards.

Progress made

To improve the lessons we learn from accidents, in 2016 we introduced a comprehensive new incident reporting and investigation system. The new system is helping us achieve a better understanding of the root causes of incidents, identify trends early and track the corrective action taken on accidents.

To ensure our employees are fit for work we introduced a new global standard for occupational medicals. Our employee medicals will now be carried out in a consistent way group-wide, ensuring the health and wellbeing of our employees is protected.

In 2016 we also participated in the International Labour Organization's World Day for Safety and Health at Work. At over 75 events, LR's offices around the world participated in simple measures that employees can take to reduce stress and improve their health and wellbeing. LR's activities included cardiovascular training, healthy eating initiatives, walking and hiking events, wellbeing talks, blood donations, massages, malaria awareness, eye care screening, and yoga and meditation classes.

A key element of sharing our expertise in safety is the advice that our field surveyors provide our clients when undertaking their work. Over the year our surveyors provided over 7,800 safety recommendations during their work. This simple advice relates to safety behaviours or unsafe actions observed during the surveys and is real-time examples of our people sharing their expertise.

Our plans for 2016/17

We will introduce a safety culture change programme. A behavioural safety framework will be introduced to guide our employees on the tangible actions, mind-sets and behaviours that collectively will contribute towards a safety culture. We will train our managers on safety leadership and to measure and track the change within each team using safety culture surveys. We will also introduce a broader ownership of safety across the business, establishing a clear line of accountability for safety risks, controls and performance.

To complement our new focus on behaviours and culture, we will simplify our safety processes and introduce a new set of group-wide requirements for our most common high-risk activities, called LifeSavers. These simple safety-critical rules will provide a concise and consistent level of control of the highest risks present in our businesses. To ensure the LR LifeSavers are understood and bring about a more stringent control of critical risks, each will be accompanied with a toolkit including bespoke training videos. We will also make our training for critical risks – notably confined space, boat transfers and work at height – more practical and field-based.



To ensure our employees are fit for work we introduced a new global standard for occupational medicals. Our employee medicals will now be carried out in a consistent way group-wide, ensuring the health and wellbeing of our employees is protected.

Human resources

The past year has been one of change from many perspectives.

Key drivers of change have included the need to respond to challenging market conditions, the re-alignment of our business streams to better reflect our clients' needs and the development of our new strategy under Alastair Marsh's leadership.

In March, we launched our new strategy with a major series of town hall meetings at every one of our global locations where we employ more than 15 people. Senior leaders from across LR presented to colleagues, demonstrating their ownership and support of the strategy.

This has been followed up with a series of 'coffee sessions' that are increasingly becoming part of our culture, where leaders meet with small groups of our people for open discussions about strategy, the business and indeed any issues our colleagues would like to raise.

Towards the end of the year we ran a further series of town hall meetings to communicate the implementation of our strategy and stimulate further dialogue with our teams.

People are at the heart of our new strategy, with a particular focus on shaping our culture, the introduction of a new Lloyd's Register academy, and a series of supporting initiatives that will drive improvements in the way we reward, recognise and develop our people. The Executive Leadership Team (ELT) have taken the lead in re-shaping our culture, with a series of workshops that have focused on the way they work together and this has led to a series of measureable improvements. This approach is now being rolled out to 500

leaders across the business, delivered by facilitators from within our own senior management population.

We have been focused on making our business more efficient and to speed up decision-making. This has led to a streamlining of our organisation and in particular the replacement of our three regions and twelve areas with a new six area structure. Similarly we have reduced the number of people working in group-level roles. Taken together this will help ensure that accountability is much clearer and reduce our overhead costs.

At the end of the year we launched our new HR system, Success Factors, which provides much improved functionality and tools to make it quicker and easier to access people information and carry out people-related activities online. Success Factors will provide data about our people that improves insight and decision-making while reflecting our drive to be more technology-enabled and agile and help make LR a better place to work.

Leadership development and talent management continue to be key themes for us and the highly-regarded executive development programme launched its second cohort this year. The ELT has focused on supporting the development of key talent in LR – particularly those on ELT succession plans – including team discussion of individual development followed by personal feedback from ELT members.

Governance

Board of Directors



The Board of Directors and management leadership team work together to govern and direct the activities of LR.

Board of Directors

The trading entities in the group are owned by Lloyd's Register Group Limited, which in turn is a 100% owned subsidiary of the Lloyd's Register Foundation. Lloyd's Register Group Limited is controlled and managed through its Board of Directors and management team, creating value for its shareholder and stakeholders. The Board provides leadership, sets strategy, vision and values and has established and maintains an effective relationship with the Lloyd's Register Foundation, the sole shareholder.

1 Thomas Thune Andersen Chairman

Thomas is the Chairman of the Lloyd's Register Foundation and Chairman of Lloyd's Register Group Ltd. Thomas, a former member of the board for the A.P. Moller-Maersk Group where he worked in various positions in the maritime and energy sectors for 32 years, was appointed to the board of the former Lloyd's Register in June 2010. Thomas is Chairman of Dong Energy A/S, Senior Independent Director of Petrofac, Vice Chairman of VKR Holding, the parent group of Velux, and Non-Executive Director of BW Offshore Limited.

2 Michael F Lykiardopulo Senior Independent Director

Michael was appointed Senior Independent Director on the 26 May 2016. Michael is Managing Director of Lykiardopulo and Co Ltd and is responsible for the commercial management of a fleet of oil tankers and bulk carriers. He is a qualified barrister. Michael was part of the Lloyd's Register Board which helped formulate the plans for the 2012 restructure and he served as a Trustee to help oversee the initial

development of the Lloyd's Register Foundation. He is presently also Chairman of both The UK Defence Club and The Hellenic War Risks Association as well as serving as a Director of The Gard Insurance Mutual.

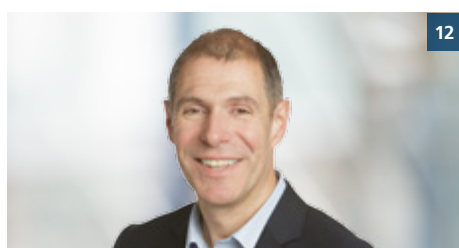
3 Ellis Armstrong Non-Executive Director

Ellis had an extensive career in the upstream oil and gas industry where he spent over 30 years with BP. He now has a portfolio of non-executive board roles. In addition to Lloyd's Register, he is on the boards of InterOil, Lamprell and Pacific Energy. He has a BSc and PhD in Civil Engineering and a Master's degree in Business Administration.

4 Chris Finlayson Non-Executive Director, Chairman of Lloyd's Register Group Ltd Remuneration Committee

Chris is Chairman of InterOil Corp. He is also Chairman of Siccar Point Energy and a Director of Høegh LNG. Formerly, he was Chief Executive of BG Group and an Executive Vice President and Managing Director with Royal Dutch Shell. Chris is a geologist, physicist and petroleum engineer with nearly 40 years' technical and commercial experience in the oil and gas industry.

Executive Leadership Team



5 Caroline Firstbrook

Non-Executive Director

Caroline, a Canadian with a degree in electrical engineering and an MBA from Harvard, has worked for a number of professional services firms, and is currently COO at Clifford Chance LLP, a major law firm. She has a background in consultancy, particularly the development of corporate strategy, including managing 1,000 strategy professionals while at Accenture.

6 Ron Henderson

Non-Executive Director, Chairman of Lloyd's Register Group Ltd Audit & Risk Committee

Ron is also a trustee of the Lloyd's Register Foundation. A chartered accountant, he is a former CFO of Network Rail and Balfour Beatty. In addition to other non-executive roles, he also served on the UK Auditing Practices Board.

7 Alastair Marsh

Chief Executive Officer

Alastair, who is a qualified chartered accountant, joined LR in April 2007, became Chief Financial Officer in April 2008 and was appointed Chief Executive Officer in October 2015. Previously he has held a number of

senior financial management positions, including Chief Financial Officer and Company Secretary of Superscope Group plc, and prior to that he held similar roles at Easynet Group plc, Laporte plc, and NCR Corporation.

8 Mary Waldner

Chief Financial Officer

Mary joined LR in March 2016, having previously been Group Finance Director at Ultra Electronics plc. Before this Mary was Director, Group Finance at QinetiQ Group plc and Group Financial Controller at 3i Group plc. From 1998 to 2008, she held a number of senior roles at British Airways plc. She is also a Non-Executive Director and Chair of the Audit Committee at Oxford Instruments plc.

Executive Leadership Team

LR's Executive Leadership Team (ELT) takes ultimate leadership responsibility for the company. The ELT together with the Senior Leadership Team work to govern and direct LR's activities.

7 Alastair Marsh

Chief Executive Officer

8 Mary Waldner

Chief Financial Officer

9 Tom Boardley

Executive Vice President and Global Head of Corporate and External Affairs

10 Nick Brown

Marine & Offshore Business Director

11 Alasdair Buchanan

Energy Business Director

12 Richard Drury

Group HR Director

13 Paul Huber

Group Regional Operations Director

14 Nial McCollam

Chief Technology Officer

15 Elaine Roberts

Group Marketing Director

16 John Rowley

Management Systems & Inspection Services Director

Lloyd's Register

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www.lr.org

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Working together for a safer world

