TRANE TECHNOLOGIES plc

Directors' Report and Financial Statements
Financial Year Ended 31 December 2022

TRANE TECHNOLOGIES PLC

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DIRECTORS AND OTHER INFORMATION

Board of Directors at 5 April 2023	Kirk E. Arnold Ann C. Berzin April Miller Boise John G. Bruton Jared L. Cohon Gary D. Forsee Mark R. George John A. Hayes Linda P. Hudson Myles P. Lee David S. Regnery Melissa N. Schaeffer John P. Surma Tony L. White
Company Secretaries	Evan M. Turtz (Company Secretary) Computershare Inc. (Assistant Secretary)
Registered Office	170-175 Lakeview Drive Airside Business Park Swords Co. Dublin
Registered Number	469272
Solicitor	Arthur Cox Ten Earlsfort Terrace Dublin 2
Auditors	PricewaterhouseCoopers One Spencer Dock North Wall Quay Dublin 1
Principal Bankers	JP Morgan Chase Bank, 125 London Wall London EC2Y 5AJ England

Directors’ report for the year ended 31 December 2022.

The directors present their report and the Financial Statements and related Notes of Trane Technologies plc for the financial year ended 31 December 2022.

Principal Activities

Trane Technologies plc (Plc, Parent Company or Company), a public limited company incorporated in Ireland in 2009, and its consolidated subsidiaries (collectively, we, our, the Group) is a global climate innovator. We bring sustainable and efficient solutions to buildings, homes and transportation through our strategic brands, Trane® and Thermo King®, and our environmentally responsible portfolio of products, services and connected intelligent controls. We generate turnover and cash primarily through the design, manufacture, sales and service of solutions for Heating, Ventilation and Air Conditioning (HVAC), transport refrigeration and custom refrigeration solutions. As an industry leader with an extensive global install base, our growth strategy includes expanding recurring turnover through services and rental options. Our unique business operating system, uplifting culture and highly engaged team around the world are also central to our earnings and cash flow growth.

Through our sustainability-focused strategy and purpose to *boldly challenge what’s possible for a sustainable world*, we meet critical needs and growing global demand for innovation that reduces greenhouse gas emissions while enabling healthier, efficient indoor environments and safe, reliable delivery of essential temperature-controlled cargo. We have announced certain defined sustainability commitments with a goal of achieving these commitments by 2030 (2030 Sustainability Commitments). Trane Technologies’ bold 2030 Sustainability Commitments have been verified by the Science Based Targets initiative (SBTi) and include our ‘Gigaton Challenge’ to reduce customer greenhouse gas emissions by a billion metric tons, ‘Leading by Example’ through carbon-neutral operations across our own footprint, and ‘Opportunity for All’ by building a diverse workforce reflective of our communities.

Reportable Segments

We operate under three reportable segments.

- Our Americas segment innovates for customers in the North America and Latin America regions. The Americas segment encompasses commercial heating, cooling and ventilation systems, building controls, and energy services and solutions; residential heating and cooling; and transport refrigeration systems and solutions. This segment had 2022 turnover of $12,640.8 million.
- Our EMEA segment innovates for customers in the Europe, Middle East and Africa region. The EMEA segment encompasses heating, cooling and ventilation systems, services and solutions for commercial buildings and industrial processing, and transport refrigeration systems and solutions. This segment had 2022 turnover of $2,034.5 million.
- Our Asia Pacific segment innovates for customers throughout the Asia Pacific region. The Asia Pacific segment encompasses heating, cooling and ventilation systems, services and solutions for commercial buildings and transport refrigeration systems and solutions. This segment had 2022 turnover of $1,316.4 million.

Products and Services

Our principal products and services include the following:

Air conditioners	Large commercial unitary
Air exchangers	Light commercial unitary
Air handlers	Multi-pipe HVAC systems
Airside and terminal devices	Package heating and cooling systems
Air-sourced heat pumps	Parts and supplies (aftermarket and OEM)
Auxiliary power units (electric and diesel)	Rail refrigeration systems
Building management systems	Rate chambers
Bus air purification systems	Refrigerant reclamation
Bus and rail HVAC systems	Renewable energy projects
Chillers	Repair and maintenance services
Coils and condensers	Rental services
Container refrigeration systems and gensets	Residential Air Filtration System
Control systems	Residential Hybrid Heating Solutions
Cryogenic refrigeration systems	Self-powered truck refrigeration systems
Dehumidifiers	Service agreements
Ductless	Telematics Solutions
Energy efficiency programs	Temporary heating and cooling systems
Energy infrastructure programs	Thermal energy storage
Energy management services	Thermostats/controls & associated digital solutions
Energy performance contracting	Trailer refrigeration systems (diesel, electric and hybrid)
Furnaces	Transport heater products
Geothermal systems	Truck refrigeration systems (diesel, electric and hybrid)
Home automation	Ultra-low temperature freezers
Humidifiers	Unitary systems (light and large)
HVAC Performance-monitoring applications	Variable refrigerant flow
Indoor air quality assessments and related products for HVAC and Transport solutions	Vehicle-powered truck refrigeration systems
Industrial refrigeration	Ventilation
Installation contracting	Water source heat pumps

These products are sold primarily under our tradenames including Trane® and Thermo King®.

Competitive Conditions

Our products and services are sold in highly competitive markets throughout the world. Due to the diversity of these products and services and the variety of markets served, we encounter a wide variety of competitors that vary by product line and services. They include well-established regional or specialized competitors, as well as larger U.S. and non-U.S. corporations or divisions of larger companies.

The principal methods of competition in these markets relate to price, quality, delivery, service and support, technology and innovation. We are one of the leading manufacturers in the world of HVAC systems and services and transport temperature control products and services.

Distribution

Our products are distributed by a number of methods, which we believe are appropriate to the type of product. U.S. sales are made through branch sales offices, distributors and dealers across the country. Non-U.S. sales are made through numerous subsidiary sales and service companies with a supporting chain of distributors throughout the world.

Operations by Geographic Area

Approximately 28% of our turnover in 2022 was derived outside the U.S. and we sold products in approximately 100 countries. Therefore, the attendant risks of manufacturing or selling in a particular country, such as currency devaluation, nationalization and establishment of common markets, may have an adverse impact on our non-U.S. operations.

Customers

We have no customer that accounted for more than 10% of our consolidated turnover in 2022 and 2021. No material part of our business is dependent upon a single customer or a small group of customers; therefore, the loss of any one customer would not have a material adverse effect on our results of operations or cash flows.

Materials

We both manufacture and procure many of the components included in our products. For components we manufacture, we are required to source a wide variety of commodities, such as steel, copper and aluminum. These principal commodities are purchased from a large number of independent sources around the world, primarily within the region where the products are manufactured. We believe that available sources of supply will generally be sufficient for the foreseeable future.

For many components we procure, we have multiple capable sources with minimal concerns for sufficient supply, however there are certain categories of components that continue to see limited availability or shortages.

Seasonality

Demand for certain of our products and services is influenced by weather conditions. For instance, sales in our commercial and residential HVAC businesses historically tend to be higher in the second and third quarters of the year because this represents spring and summer in the U.S. and other northern hemisphere markets, which are the peak seasons for sales of air conditioning systems and services. Therefore, results of any quarterly period may not be indicative of expected results for a full year and unusual weather patterns or events could positively or negatively affect certain segments of our business and impact overall results of operations.

Research and Development

We engage in research and development activities in an effort to introduce new products, enhance existing product effectiveness, improve ease of use and reliability as well as expand the various applications for which our products may be appropriate. In 2022, we spent $211.2 million on research and development, focused on product and system sustainability improvements such as increasing energy efficiency, developing products that allow for use of lower global warming potential refrigerants, reducing material content in products, and designing products for circularity. All new product development (NPD) programs must complete a Design for Sustainability module within our NPD process to ensure that every program has a positive impact on sustainability.

We also have a strong focus on sustaining activities, which include costs incurred to reduce production costs, improve existing products, create custom solutions for customers and provide support to our manufacturing facilities. We anticipate that we will continue to make significant expenditures for research and development and sustaining activities as we look to maintain and improve our competitive position.

Patents and Licenses

Our intellectual property rights are important to our business and include numerous patents, trademarks, copyrights, trade secrets, proprietary technology, technical data, business processes, and other confidential information. Although in the aggregate we consider our intellectual property rights to be valuable to our operations, we do not believe that our business is materially dependent on a single intellectual property right or any group of them. In our opinion, engineering, production skills and experience are more responsible for our market position than our intellectual property rights.

Backlog

Our backlog of orders, believed to be firm, at 31 December, was as follows:

	2022 $m	2021 $m
Americas	5,325.2	3,856.7
EMEA	616.1	727.2
Asia Pacific	941.8	852.8
Total	6,883.1	5,436.7

These backlog figures are based on orders received and only include amounts associated with our equipment and contracting and installation performance obligations. Beginning in 2022, our backlog figures include additional turnover streams due to increased lead times. A major portion of our products are built in advance of order and either shipped or assembled from stock. As a result, we expect to ship a majority of the 31 December 2022 backlog during 2023. However, orders for specialized machinery or specific customer application are submitted with extensive lead times and are often subject to revision and deferral, and to a lesser extent cancellation or termination. During the year ended 31 December 2022, we experienced significant increases in end market demand for our sustainability-focused products and services resulting in a higher backlog of orders in the current year as compared to prior year. In addition, we are seeing industry-wide supply chain and resource constraints impacting our ability to produce and ship product which we are proactively managing. To the extent projects are delayed or there are additional supply chain and resource constraints, the timing of our turnover could be affected.

Environmental Matters

We continue to be dedicated to environmental and sustainability programs to minimize the use of natural resources, reduce the utilization and generation of hazardous materials from our manufacturing processes and to remediate identified environmental concerns. As to the latter, we are currently engaged in site investigations and remediation activities to address environmental cleanup from past operations at current and former manufacturing facilities and off-site waste disposal facilities.

It is our policy to establish reserves for remediation activities when it is probable that a liability has been incurred and a reasonable estimate of the liability can be made. Estimated liabilities are determined based upon existing remediation laws and technologies. Inherent uncertainties exist in such evaluations due to unknown environmental conditions, changes in government laws and regulations, and changes in cleanup technologies. The environmental reserves are updated on a routine basis as remediation efforts progress and new information becomes available.

We are sometimes a party to environmental lawsuits and claims and have received notices of potential violations of environmental laws and regulations from the Environmental Protection Agency and similar state and international authorities. We have also been identified as a potentially responsible party (PRP) for cleanup costs associated with off-site waste disposal at federal Superfund and state remediation sites. In most instances at multi-party sites, our share of the liability is not material.

In estimating our liability at multi-party sites, we have assumed that we will not bear the entire cost of remediation of any site to the exclusion of other PRPs who may be jointly and severally liable. The ability of other PRPs to participate has been taken into account, based on our understanding of the parties' financial condition and probable contributions on a per site basis.

For a further discussion of our potential environmental liabilities, see Note 29 to the Consolidated Financial Statements.

Separation of Industrial Segment Businesses

On 29 February 2020 (Distribution Date), we completed our Reverse Morris Trust transaction (the Transaction) with Gardner Denver Holdings, Inc. (Gardner Denver, which changed its name to Ingersoll Rand Inc. (Ingersoll Rand) after the Transaction) whereby we distributed Ingersoll-Rand U.S. HoldCo, Inc., which contained our former Industrial segment (Ingersoll Rand Industrial) through a pro rata distribution (the Distribution) to shareholders of record as of 24 February 2020 (Spin-off Shareholders). Ingersoll Rand Industrial then merged into a wholly-owned subsidiary of Ingersoll Rand. Upon close of the Transaction, the Spin-off Shareholders received 50.1% of the shares of Ingersoll Rand common stock on a fully-diluted basis and Gardner Denver shareholders retained 49.9% of the shares of Ingersoll Rand on a fully diluted basis. As a result, the Spin-off Shareholders received .8824 shares of Ingersoll Rand common stock with respect to each share owned as of 24 February 2020. In connection with the Transaction, we received a special cash payment of $1.9 billion.

During the year ended 31 December 2022, we recorded a reduction to *Profit and loss account reserve* of $18.9 million primarily related to tax matters associated with Ingersoll Rand Industrial and the settlement of certain items related to the Transaction. During the year ended 31 December 2021, we paid Ingersoll Rand $49.5 million to settle certain items related to the Transaction. This payment was related to working capital, cash and indebtedness amounts as of the Distribution Date, as well as funding levels related to pension plans, non-qualified deferred compensation plans and retiree health benefits. We recorded the settlement as a reduction to *Profit and loss account reserve* during the first quarter of 2021.

After the Distribution Date, we do not beneficially own any Ingersoll Rand Industrial shares of common stock and no longer consolidate Ingersoll Rand Industrial in our financial statements. The historical results of Ingersoll Rand Industrial are presented as a discontinued operation in the Consolidated Profit and Loss Account and Consolidated Statements of Cash Flows.

Asbestos-Related Matters

We are involved in a number of asbestos-related lawsuits, claims and legal proceedings. In June 2020, our indirect wholly-owned subsidiaries Aldrich Pump LLC (Aldrich) and Murray Boiler LLC (Murray) each filed a voluntary petition for reorganization under Chapter 11 of Title 11 of the United States Code (the Bankruptcy Code) in the United States Bankruptcy Court for the Western District of North Carolina in Charlotte (the Bankruptcy Court). As a result of the Chapter 11 filings, all asbestos-related lawsuits against Aldrich and Murray have been stayed due to the imposition of a statutory automatic stay applicable in Chapter 11 bankruptcy cases. Only Aldrich and Murray have filed for Chapter 11 relief. Neither Aldrich's wholly-owned subsidiary, 200 Park, Inc. (200 Park), Murray's wholly-owned subsidiary, ClimateLabs LLC (ClimateLabs), Trane Technologies plc nor its other subsidiaries (the Trane Companies) are part of the Chapter 11 filings. In addition, at the request of Aldrich and Murray, the Bankruptcy Court has entered an order temporarily staying all asbestos-related claims against the Trane Companies that relate to claims against Aldrich and Murray (except for asbestos-related claims for which the exclusive remedy is provided under workers' compensation statutes or similar laws).

The goal of these Chapter 11 filings is to resolve equitably and permanently all current and future asbestos-related claims in a manner beneficial to claimants, Aldrich and Murray through court approval of a plan of reorganization that would create a trust pursuant to section 524(g) of the Bankruptcy Code, establish claims resolution procedures for all current and future asbestos-related claims against Aldrich and Murray and channel such claims to the trust for resolution in accordance with those procedures.

For detailed information on the bankruptcy cases of Aldrich and Murray, see:

- Principal Risks - Risks Related to Litigation
- Results of Operations - Significant Events
- Notes 1 and 29 to the Consolidated Financial Statements.

Human Capital Management

Our people and culture are critical to achieving our operational, financial and strategic success.

As of 31 December 2022, we employed approximately 39,000 people in nearly 60 countries including approximately 14,000 outside of the U.S. As of 31 December 2022, 25.7% of our global employees were women and 37.4% of our employees in the United States were racially and ethnically diverse. In 2022, 30.2% of our new hires globally were women and 50.5% of new hires in the United States were racially and ethnically diverse. Approximately 24.2% of leadership and management positions were held by women as of 31 December 2022. The diversity amounts included in this section exclude current year business acquisitions.

As a result of Trane Technologies maintaining a consistent focus on an uplifting culture, our key talent (employees with the highest potential rating) retention rate in 2022 was 93.1%. Our company-wide (all employees) voluntary retention rate excluding retirements was 86.3%.

Culture and Purpose

In 2022, we continued to drive our purpose to boldly challenge what's possible for a sustainable world through our strategic priorities and 2030 Sustainability Commitments. We use our Leadership Principles to guide our actions each day and enable our uplifting, engaging and inclusive culture. As part of our commitment to people and culture, we strive to create a work environment where our people uplift each other, make a positive impact on the planet and thrive at work and at home.

Since 2006, our annual employee engagement survey has enabled employees to share their experiences and perceptions of our Company. Employees provide ratings and written comments for continuous improvement. In 2022, 88% of our workforce participated in our annual engagement survey, and our overall employee engagement score remains high. While our work on culture is never done, these scores indicate that we're continuing to raise the bar to increase pride, energy and optimism across the company and create the best employee experience.

Diversity and Inclusion

Our commitment to Diversity and Inclusion is core to our purpose and our 2030 Sustainability Commitments. We are proud members of Paradigm for Parity (a coalition of more than 100 corporations who have committed to closing the gender gap in corporate leadership) and OneTen (a coalition dedicated to hiring one million Black Americans in the next ten years to achieve economic mobility). In addition, we are a 2017 signatory to the CEO Action for Diversity and Inclusion pledge (the largest CEO-driven business commitment to advance diversity and inclusion within the workplace).

We offer company-sponsored forums to promote diversity and inclusion in the workplace including:

- Bridging Connections – a safe forum created to allow our employees to speak from the heart about a variety of topics without fear of retribution.
- Employee Resources Groups (ERGs) – we sponsor eight ERGs (the Women's Employee Network, the Black Employee Network, the Veterans Employee Resource Group, the Asian Employee Resource Group, the Global Organization of Latinos, the Lesbian, Gay, Bisexual, Transgender and Allies (LGBTA) Employee Resource Group, the InterGenerational Employee Network, and VisAbility). All ERGs are voluntary, open and inclusive organizations that offer employees a sense of belonging, networking and learning opportunities.
- Women's Leadership Development Programs
    - The Women in Action Leadership Program is a virtual, self-paced cohort program that provides women with access to content that promotes their leadership development skills.
    - The Women on the Rise (WOR) program is designed over eight-weeks to help empower, develop, connect and support emerging women leaders.
    - The Women's Leadership Program (WLP) is a cohort program for high potential talent that provides an opportunity to network with other senior women leaders, gain individual insights through an executive mentoring partnership and build leadership skills and confidence through a variety of learning components, speakers, experiences and assessments.
- In 2022, the Inclusive Leader Learning Experience was promoted to people leaders detailing three stages of inclusive leadership: Becoming Aware, Becoming an Ally and Upstander, and Becoming a Change Agent.
- In 2022, the Global Diversity & Inclusion summit continued its focus on development of the inclusive leader behaviors; highlighting allyship.

Additionally, our corporate citizenship strategy, Sustainable Futures, which was launched in 2021, aims at creating educational and career opportunities specifically for people of color who are under-represented in our industry. This strategy will support our efforts to create opportunity for all by providing marginalized students with a range of resources, from classroom curriculum introducing them to careers at a climate innovation company, to soft-skill development for landing a science, technology, engineering, and mathematics (STEM) job.

Learning and Development

We offer learning and career development opportunities that enhance our employees' skills and abilities and ensure contemporary technical and functional skills and competencies such as innovation, collaboration and leadership. Examples of these programs include:

- Team Leader Development Program – An eight-week experiential development program that engages, teaches and empowers front-line plant leaders to apply continuous improvement methods, make sound business decisions, solve problems, and serve as a coach to their teams.
- Graduate Training Program (GTP) – A five-month development program designed to prepare university graduate engineers for a rewarding career in technical sales. The program prepares sales engineers to sell Trane's complex HVAC systems and energy services. The program, started in 1926, is recognized as the industry's most comprehensive training program and provides intensive technical, business, sales, and leadership training.
- Accelerated Development Program (ADP) – An early career rotational program focused on both functional and leadership development, designed to build a pipeline of strong talent for key roles in the organization. Participants rotate to multiple geographic locations and business units during the 2.5 year program, while completing diverse assignments, and receiving dedicated functional training and developmental experiences.

- Leadership Development - We invest in custom, key transition leadership development programs for our high potential talent. We partner with best-in-class external leadership development experts such as INSEAD, Center for Creative Leadership, and the NeuroLeadership Institute to deliver these programs globally each year. Additionally, we offer our Trane Technologies people leaders learning programs to develop their skills in leading their teams, such as building diverse and inclusive teams, increasing engagement, and coaching skills.
- Professional development – We have numerous online courses in professional development skills as varied as working virtually, resiliency, Microsoft Teams, unconscious bias, and strategic capability initiatives such as product management and other programs that support our strategy of being a world class lean enterprise.
- Dependent Scholarships - To support learning in our employees' families, we offer scholarships to support their dependent children's pursuits beyond high school, whether for a traditional degree, or a trade certification.
- Compliance Training – Our Compliance Training curriculum covers key topics that are important to protect our Company, our people and our customers. Topics include certification in our Code of Conduct, Information Security, Understanding and Preventing Sexual Harassment and Human Trafficking Prevention. All salaried employees globally complete our annual compliance curriculum.

Employee Volunteerism

In 2022, with the height of the COVID-19 pandemic behind us, we saw many employees re-engage in in-person volunteerism. From Monterrey, Mexico to St. Paul, MN and Dubai UAE to Davidson, NC, our teams made meaningful contributions to their local communities.

This year, we formed Purple Teams, a new global employee network that provides vital support for driving our corporate citizenship efforts around the world, and volunteerism in particular. More than 70 Purple Teams were established, spanning each business and region where we do business. They are comprised of local champions who will cultivate the spirit of volunteerism, ensure alignment with our strategy, and also help ensure accurate data tracking. After launching in summer 2022, one of their first coordinated engagements was a back-to-school volunteer literacy project in partnership with Reading Is Fundamental. Employees in multiple locations donated hundreds of hours assembling literacy backpacks with three new STEM-themed books and bookmarks for more than 11,000 elementary school students around the U.S. Our definition of the term community also includes our own colleagues and this year, we were honored to be able to provide relief grant support to nearly 800 employees in Puerto Rico who were impacted by Hurricane Ivan.

Employee Well-being

Trane Technologies believes employees that can thrive at work, at home and in their communities are our greatest asset. We integrate well-being into our culture through core global resources that support physical, social, emotional, and financial well-being. Several elements of our holistic well-being actions include:

- Giving 100% of our team members access to company-sponsored wellness offerings, including a global Employee Assistance Program and a global wellness platform covering an array of topics like mindfulness, resiliency, and nutrition.
- Offering financial relief through the Helping Hand program, an employee funded program created to help associates facing financial hardship immediately after a qualified disaster or an unforeseen personal hardship.
- Implementing and adapting Flex Time and Flex Place policies and resources as well as work-from-home arrangements, and other approaches to support evolving employee needs.

Recognizing the pervasiveness of mental health challenges facing employees and their families post-pandemic, we prioritized mental well-being globally by:

- Introducing a series of conversations with team members around the world to share their stories related to mental health to address stigma and promote a culture that encourages and supports open discussion about mental health issues.
- Implementing an enterprise Mental Well-Being Hub to streamline access to mental health resources and guidance for supporting others and leveraging our global Employee Assistance Program to provide frequent communications targeted to concerns such as mental health, stress & burnout, relationships, childcare and education.

Competitive Pay and Benefits

Trane Technologies' compensation programs and policies are designed to align the compensation of our employees with the Company's performance and strategy: to attract and retain a talented workforce and to meet the needs of employees globally. We are committed to providing competitive and equitable wages and benefits that will allow our employees to thrive at work and at home. In addition, the structure of our compensation programs balances incentive earnings for both long-term and short-term performance, with our annual incentive plan closely tied to our 2030 sustainability commitments, which includes environmental sustainability and workforce diversity goals, in addition to financial goals.

Trane Technologies' benefits programs and policies are designed to support the well-being of employees and their families. Purpose-driven and locally relevant benefits programs are provided globally. In addition to core and competitive medical, welfare and retirement programs, we offer programs to support work-life balance, including:

- Expanded family support programs inclusive of child and elder back-up care programs;
- Enhanced parental leave programs; and
- Tuition assistance to support the ongoing growth and development of our employees.

Our proxy statement provides more detail on the competitive compensation and benefit programs we offer.

Employee Safety

In 2022, we continued our multi-year, world class safety record with a Lost-time Incident Rate of 0.13 and Recordable Rate below 1.00. In response to the pandemic, we continue to monitor, track, update and implement our COVID-19 guidance based on World Health Organization (WHO), U.S. and European Centers for Disease Control and Prevention and other local or country specific guidelines. We completed over 35,000 observations of our service technicians and manufacturing employees to ensure all employees were following safe work practices and COVID-19 protocols.

In addition, we reviewed and updated our Automatic External Defibrillator program so that locations globally can respond to sudden cardiac arrest emergencies. We also continue to maintain all our locations globally as Tobacco Free Workplaces.

BUSINESS REVIEW

Organizational

Trane Technologies plc is a global climate innovator. We bring sustainable and efficient climate solutions to buildings, homes and transportation through our strategic brands Trane® and Thermo King®, and an environmentally responsible portfolio of products and services.

2030 Sustainability Commitments

Our commitment to sustainability extends to the environmental and social impacts of our people, operations, products and services. We have announced ambitious 2030 Sustainability Commitments including our Gigaton Challenge to reduce customers' carbon emissions by a billion metric tons. We are one of a handful of companies whose emissions reductions targets have been validated three times by the SBTi, and one of the few companies worldwide whose net-zero targets have also been validated. We are Leading by Example as we make progress toward carbon-neutral operations and zero waste-to-landfill across our global footprint and net positive water use in water-stressed locations. Our Opportunity for All commitment focuses on gender parity in leadership, workforce diversity reflective of our communities, and a citizenship strategy that helps underserved communities through enhanced learning environments and pathways to green and Science, Technology, Engineering and Math (STEM) careers.

Recent Acquisitions

On 31 October 2022, we completed the acquisition of AL-KO Air Technology (AL-KO). AL-KO brings complementary, high-performing solutions to the comprehensive Trane Commercial HVAC product and services portfolios in Europe and Asia. The results of the acquisition are reported within the EMEA and Asia Pacific segments.

On 1 April 2022, we completed a channel acquisition of a Commercial HVAC independent dealer to support our ongoing strategy to expand our distribution network and service area. The results of the channel acquisition are reported within the Americas segment.

Significant Events

Reorganization of Aldrich and Murray

On 18 June 2020 (Petition Date), our indirect wholly-owned subsidiaries, Aldrich and Murray each filed a voluntary petition for reorganization under the Bankruptcy Code. As a result of the Chapter 11 filings, all asbestos-related lawsuits against Aldrich and Murray have been stayed due to the imposition of a statutory automatic stay applicable in Chapter 11 bankruptcy cases. Only Aldrich and Murray have filed for Chapter 11 relief. Neither Aldrich's wholly-owned subsidiary, 200 Park, Murray's wholly-owned subsidiary, ClimateLabs, nor the Trane Companies are part of the Chapter 11 filings.

The goal of these Chapter 11 filings is to resolve equitably and permanently all current and future asbestos-related claims in a manner beneficial to claimants, Aldrich and Murray through court approval of a plan of reorganization that would create a trust pursuant to section 524(g) of the Bankruptcy Code, establish claims resolution procedures for all current and future asbestos-related claims against Aldrich and Murray and channel such claims to the trust for resolution in accordance with those procedures.

Aldrich and its wholly-owned subsidiary 200 Park and Murray and its wholly-owned subsidiary ClimateLabs were deconsolidated as of the Petition Date and their respective assets and liabilities were derecognized from our Consolidated Financial Statements.

During the year ended 31 December 2021, in connection with the agreement in principle reached by Aldrich and Murray with the FCR and the motion filed on 24 September 2021 to create a $270.0 million "qualified settlement fund" within the meaning of the Treasury Regulations under Section 468B of the Internal Revenue Code (QSF), we recorded a charge of $21.2 million to increase our Funding Agreement liability to $270.0 million. The corresponding charge was bifurcated between *Other operating expense* of $7.2 million relating to Murray and discontinued operations of $14.0 million relating to Aldrich.

On 27 January 2022, the Bankruptcy Court granted the request to fund the QSF, which was funded on 2 March 2022, resulting in an operating cash outflow of $270.0 million in our Consolidated Statement of Cash Flows, of which $91.8 million was allocated to continuing operations and $178.2 million was allocated to discontinued operations for the year ended 31 December 2022. At this point in the Chapter 11 cases of Aldrich and Murray, it is not possible to predict whether the Bankruptcy Court will approve the terms of the Plan, what the extent of the asbestos liability will be or how long the Chapter 11 cases will last. The Chapter 11 cases remain pending as of 5 April 2023.

For detailed information on the bankruptcy cases of Aldrich and Murray, see Directors' Report - Asbestos-Related Matters, Principal Risks - Risks Related to Litigation, and Notes 1 and 29 to the Consolidated Financial Statements.

Trends and Economic Events

We are a global corporation with worldwide operations. As a global business, our operations are affected by worldwide, regional and industry-specific economic factors as well as political and social factors wherever we operate or do business. Our geographic diversity and the breadth of our product and services portfolios have helped mitigate the impact of any one industry or the economy of any single country on our consolidated operating results.

Given our broad range of products manufactured and geographic markets served, management uses a variety of factors to predict the outlook of the company. We monitor key competitors and customers in order to gauge relative performance and the outlook for the future. We regularly perform detailed evaluations of the different market segments we are serving to proactively detect trends and to adapt our strategies accordingly, including potential triggers and actions to be taken under recessionary scenarios. In addition, we believe our backlog and order levels are indicative of future revenues and thus are a key measure of anticipated performance.

Current economic conditions remain mixed across our end markets. The COVID-19 global pandemic continues to impact both the global Heating, Ventilation and Air Conditioning (HVAC) and Transport end markets as disruptions and delays in the global supply chain and resource constraints continue to be experienced. However, despite these challenges, overall end market demand remained healthy as we continued to proactively manage global supply chain and resource constraints by working closely with our suppliers, customers and logistics providers to mitigate the impacts on our business as we continue to sell, install and service our products.

We expect market conditions to remain mixed across the geographies where we serve our customers as the impact from COVID-19 eases; however, macroeconomic events including material cost, wage and energy inflation and tightening financial conditions, as a result of higher interest rates, could increase the likelihood of deteriorating economic conditions which could have a negative impact on our business. The extent to which the COVID-19 pandemic and other macro economic conditions continue to impact the Company's results of operations and financial condition will depend on future developments that are highly uncertain and cannot be predicted. See "Principal Risks - Risks Related to Economic Conditions," for more information.

Furthermore, when Russia invaded Ukraine in February 2022, we immediately halted new orders and shipments into and out of Russia and Belarus. As of 31 December 2022, we have exited all business activity within these markets. To date, the Russia-Ukraine war has not had a material adverse effect on our business or financial performance. See "Principal Risks - Risks Related to Economic Conditions," for more information.

We believe we have a solid foundation of global brands that are highly differentiated in all of our major product lines. Our geographic and product diversity coupled with our large installed product base provides growth opportunities within our service, parts and replacement turnover streams. In addition, we are investing substantial resources to innovate and develop new products and services which we expect will drive our future growth.

Results of Operations

Year Ended 31 December 2022 Compared to the Year Ended 31 December 2021 - Consolidated Results

	2022	2021	Period Change
	$m	$m	$m
Turnover	15,991.7	14,136.4	1,855.3
Cost of sales	(11,026.9)	(9,666.8)	(1,360.1)
Gross Profit	4,964.8	4,469.6	495.2
Distribution costs and administrative expenses	(2,545.9)	(2,446.3)	(99.6)
Other operating expense	(32.5)	(2.9)	(29.6)
Operating profit	2,386.4	2,020.4	366.0
Interest receivable and similar income	9.2	4.0	5.2
Interest payable and similar charges	(223.5)	(233.7)	10.2
Profit on ordinary activities before taxation	2,172.1	1,790.7	381.4
Tax on profit on ordinary activities	(375.9)	(333.5)	(42.4)
Profit on ordinary activities after taxation	1,796.2	1,457.2	339.0
Discontinued operations, net of taxation	(21.5)	(20.6)	(0.9)
Profit for the financial year	1,774.7	1,436.6	338.1

KEY PERFORMANCE INDICATORS

Turnover

Turnover for the year ended 31 December 2022 increased by 13.1%, or $1,855.3 million, compared with the same period of 2021. The components of the period change were as follows:

	2022	2021
Pricing	9.6 %	3.6 %
Volume	4.9 %	7.5 %
Acquisitions	0.8 %	1.6 %
Currency translation	(2.2)%	0.8 %
Total	13.1 %	13.5 %

The increase in *Turnover* was primarily driven by inflation-based price increases, end customer demand within all our reportable segments and incremental turnover from acquisitions, partially offset by an unfavorable impact from foreign currency translation. Pricing and volume increases were experienced in all segments. Refer to "Results by Segment" below for a discussion of *Turnover* by segment.

Gross Profit Margin

Gross profit margin for the year ended 31 December 2022 decreased by 60 basis points to 31.0% compared to 31.6% for the same period of 2021 primarily due to significant direct material, freight and other inflation, and unfavorable impacts to productivity arising from supply chain, freight and logistics challenges, partially offset by inflation-based price increases.

Distribution Costs and Administrative Expenses

Distribution costs and *Administrative expenses* for the year ended 31 December 2022 increased by 4.1%, or $99.6 million, compared with the same period of 2021. The increase in *Distribution costs* and *Administrative expenses* was primarily driven by an increase in human capital related costs as a result of investing in our people, travel costs and amortization due to acquisitions, partially offset by favorable non-cash adjustments to contingent consideration of $46.9 million.

Distribution costs and Administrative expenses as a percentage of *Turnover* for the year ended 31 December 2022 decreased 140 basis points from 17.3% to 15.9% primarily due to higher turnover year-over-year.

Interest payable and similar charges

Interest payable and similar charges for the year ended 31 December 2022 decreased by 4.4% or $10.2 million compared with the same period of 2021 primarily due to the repayments of $125.0 million of 9.000% Debentures in August 2021 and $300.0 million of 2.900% Senior notes in February 2021.

Other operating expense

The components of *Other operating expense*, for the years ended 31 December were as follows:

	2022 $m	2021 $m	Period Change $m
Foreign currency exchange loss	(17.9)	(10.7)	(7.2)
Other components of net periodic benefit credit/(cost)	(10.6)	(1.6)	(9.0)
Other miscellaneous income/(expense)	(4.0)	9.4	(13.4)
Other operating expense	(32.5)	(2.9)	(29.6)

Other operating expense includes the results from activities other than normal business operations such as foreign currency gains and losses on transactions that are denominated in a currency other than an entity's functional currency. In addition, we include the components of net periodic benefit cost for pension and post retirement obligations other than the service cost component. During the year ended 31 December 2022, we recorded a $15.0 million settlement charge for a compensation related payment to a retired executive within other components of net periodic benefit credit/(cost). Other activity, net primarily includes items associated with certain legal matters, as well as asbestos-related activities of Murray. During the year ended 31 December 2021, we recorded a gain of $12.8 million related to the release of a pension indemnification liability, partially offset by a charge of $7.2 million to increase our Funding Agreement liability from asbestos-related activities of Murray.

Provision for taxation

The 2022 effective tax rate was 17.3% which was lower than the U.S. Statutory rate of 21% due to a $48.2 million reduction in valuation allowances primarily related to certain net state deferred tax assets resulting from U.S. legal entity restructurings and deferred tax assets associated with foreign tax credits as a result of an increase in the current year amount of creditable foreign source income. Additional tax benefits included in this year's effective rate are $12.4 million, net related to the current year's effects of a prepayment of an intercompany obligation in 2021, excess tax benefits from employee share-based payments and earnings in non-U.S. jurisdictions, which in aggregate have a lower effective tax rate. These amounts were partially offset by U.S. state and local taxes and certain non-deductible employee expenses. Revenues from non-U.S. jurisdictions accounted for approximately 28% of our total 2022 revenues, such that a material portion of our pretax income was earned and taxed outside the U.S. at rates ranging from 0% to 38%. When comparing the results of multiple reporting periods, among other factors, the mix of earnings between U.S. and foreign jurisdictions can cause variability in our overall effective tax rate.

The 2021 effective tax rate was 18.6% which was lower than the U.S. Statutory rate of 21% due to a $21.4 million reduction in valuation allowances on deferred tax assets primarily related to foreign tax credits as a result of an increase in current year foreign source income, excess tax benefits from employee share-based payments, and earnings in non-U.S. jurisdictions, which in aggregate have a lower effective tax rate. These amounts were partially offset by the recognition of a net $11.6 million tax expense related to a prepayment of an intercompany obligation, U.S. state and local taxes and certain non-deductible employee expenses. Revenues from non-U.S. jurisdictions accounted for approximately 29.0% of our total 2021 revenues, such that a material portion of our pretax income was earned and taxed outside the U.S. at rates ranging from 0% to 38%. When comparing the results of multiple reporting periods, among other factors, the mix of earnings between U.S. and foreign jurisdictions can cause variability in our overall effective tax rate.

Year Ended 31 December 2022 Compared to the Year Ended 31 December 2021 - Segment Results

We operate under four regional operating segments designed to create deep customer focus and relevance in markets around the world. The Company determined that its two Europe, Middle East and Africa (EMEA) operating segments meet the aggregation criteria based on similar operating and economic characteristics, resulting in one reportable segment. Therefore, the Company has three regional reportable segments, Americas, EMEA and Asia Pacific.

- Our Americas segment innovates for customers in North America and Latin America. The Americas segment encompasses commercial heating, cooling and ventilation systems, building controls, and energy services and solutions; residential heating and cooling; and transport refrigeration systems and solutions.

- Our EMEA segment innovates for customers in the Europe, Middle East and Africa region. The EMEA segment encompasses heating, cooling and ventilation systems, services and solutions for commercial buildings, and transport refrigeration systems and solutions.
- Our Asia Pacific segment innovates for customers throughout the Asia Pacific region. The Asia Pacific segment encompasses heating, cooling and ventilation systems, services and solutions for commercial buildings and transport refrigeration systems and solutions.

Management measures segment operating performance based on net earnings excluding interest expense, income taxes, depreciation and amortization, restructuring, non-cash adjustments for contingent consideration, insurance settlement on property claim in Q3 2022, merger and acquisition-related costs, unallocated corporate expenses and discontinued operations (Segment Adjusted EBITDA). Segment Adjusted EBITDA is not defined under accounting principles generally accepted in the United States of America (GAAP) and may not be comparable to similarly-titled measures used by other companies and should not be considered a substitute for net earnings or other results reported in accordance with GAAP. We believe Segment Adjusted EBITDA provides the most relevant measure of profitability as well as earnings power and the ability to generate cash. This measure is a useful financial metric to assess our operating performance from period to period by excluding certain items that we believe are not representative of our core business and we use this measure for business planning purposes. Segment Adjusted EBITDA also provides a useful tool for assessing the comparability between periods and our ability to generate cash from operations sufficient to pay taxes, to service debt and to undertake capital expenditures because it eliminates non-cash charges such as depreciation and amortization expense.

The following discussion compares our results for each of our three reportable segments for the year ended 31 December 2022 compared to the year ended 31 December 2021.

	2022 $m	2021 $m	Period Change $m	% Change
Americas				
Turnover	12,640.8	10,957.1	1,683.7	15.4 %
Segment Adjusted EBITDA	2,326.3	2,008.8	317.5	15.8 %
Segment Adjusted EBITDA as a percentage of turnover	18.4 %	18.3 %		
EMEA				
Turnover	2,034.5	1,944.9	89.6	4.6 %
Segment Adjusted EBITDA	338.1	359.2	(21.1)	(5.9)%
Segment Adjusted EBITDA as a percentage of turnover	16.6 %	18.5 %		
Asia Pacific				
Turnover	1,316.4	1,234.4	82.0	6.6 %
Segment Adjusted EBITDA	248.3	228.5	19.8	8.7 %
Segment Adjusted EBITDA as a percentage of turnover	18.9 %	18.5 %		
Total Turnover	15,991.7	14,136.4	1,855.3	13.1 %
Total Segment Adjusted EBITDA	2,912.7	2,596.5	316.2	12.2 %
Total Segment Adjusted EBITDA as a percentage of turnover	18.2 %	18.4 %		

Americas

Turnover for the year ended 31 December 2022 increased by 15.4% or $1,683.7 million, compared with the same period of 2021.

The components of the period change were as follows:

	2022	2021
Pricing	10.7 %	4.3 %
Volume	4.2 %	7.0 %
Acquisitions	0.7 %	1.8 %
Currency translation	(0.2)%	— %
Total	15.4 %	13.1 %

The increase in *Turnover* was primarily driven by inflation-based price increases, higher volumes driven by increased end-customer demand and incremental revenues from acquisitions.

Segment Adjusted EBITDA margin for the year ended 31 December 2022 increased by 10 basis points to 18.4% compared to 18.3% for the same period of 2021 primarily due to favorable pricing, volume and productivity largely offset by higher material costs, other inflation and higher costs to serve customers arising from supply chain, freight and logistics challenges.

EMEA

Turnover for the year ended 31 December 2022 increased by 4.6% or $89.6 million, compared with the same period of 2021.

The components of the period change were as follows:

	2022	2021
Pricing	7.1 %	1.1 %
Volume	7.4 %	11.6 %
Acquisitions	1.2 %	1.6 %
Currency translation	(11.1)%	3.1 %
Transfer of sales from Asia Pacific segment	— %	0.6 %
Total	4.6 %	18.0 %

The increase in *Turnover* was primarily driven by higher volumes driven by increased end-customer demand, inflation-based price increases and incremental revenues from acquisitions, partially offset by unfavorable currency translation. Excluding the impact of foreign currency translation and acquisitions, *Turnover* increased by 14.5%.

Segment Adjusted EBITDA margin for the year ended 31 December 2022 decreased by 190 basis points to 16.6% compared to 18.5% for the same period of 2021 primarily due to favorable pricing, volume and productivity, more than offset by higher material costs, other inflation and higher costs to serve customers arising from supply chain, freight and logistics challenges.

Asia Pacific

Turnover for the year ended 31 December 2022 increased by 6.6% or $82.0 million, compared with the same period of 2021.

The components of the period change were as follows:

	2022	2021
Pricing	3.4 %	2.0 %
Volume	8.4 %	5.5 %
Acquisitions	0.7 %	— %
Currency translation	(5.9)%	3.6 %
Transfer of sales to EMEA segment	— %	(1.0)%
Total	6.6 %	10.1 %

The increase in *Turnover* was primarily driven by higher volumes related to increased end-customer demand. Inflation-based price increases and incremental revenues from acquisitions were partially offset by an unfavorable impact from foreign currency translation. Excluding the impact of foreign currency translation and acquisitions, *Turnover* increased by 11.8%.

Segment Adjusted EBITDA margin for the year ended 31 December 2022 increased by 40 basis points to 18.9% compared to 18.5% for the same period of 2021 primarily due to favorable pricing, volume and productivity, partially offset by higher material costs, other inflation and higher costs to serve customers arising from supply chain, freight and logistics challenges.

LIQUIDITY AND CAPITAL RESOURCES

We assess our liquidity in terms of our ability to generate cash to fund our operating, investing and financing activities. In doing so, we review and analyze our current cash on hand, the number of days our sales are outstanding, stock turns, capital expenditure commitments and income tax payments. Our cash requirements primarily consist of the following:

- Funding of working capital
- Debt service requirements
- Funding of capital expenditures
- Dividend payments
- Funding of acquisitions, joint ventures and equity investments
- Share repurchases

Our primary sources of liquidity include cash balances on hand, cash flows from operations, proceeds from debt offerings, commercial paper, and borrowing availability under our existing credit facilities. We earn a significant amount of our operating income in jurisdictions where it is deemed to be permanently reinvested. Our most prominent jurisdiction of operation is the U.S. We expect existing cash and cash equivalents available to the U.S. operations, the cash generated by our U.S. operations, our committed credit lines as well as our expected ability to access the capital and debt markets will be sufficient to fund our U.S. operating and capital needs for at least the next twelve months and thereafter for the foreseeable future. In addition, we expect existing non-U.S. cash and cash equivalents and the cash generated by our non-U.S. operations will be sufficient to fund our non-U.S. operating and capital needs for at least the next twelve months and thereafter for the foreseeable future. The maximum aggregate amount of unsecured commercial paper notes available to be issued, on a private placement basis, under the commercial paper program is $2.0 billion, of which we had no outstanding balance as of 31 December 2022.

As of 31 December 2022, we had $1,220.5 million of cash and cash equivalents on hand, of which $814.5 million was held by non-U.S. subsidiaries. Cash and cash equivalents held by our non-U.S. subsidiaries are generally available for use in our U.S. operations via intercompany loans, equity infusions or via distributions from direct or indirectly owned non-U.S. subsidiaries for which we do not assert permanent reinvestment. As a result of the Tax Cuts and Jobs Act in 2017, additional repatriation opportunities to access cash and cash equivalents held by non-U.S. subsidiaries have been created. In general, repatriation of cash to the U.S. can be completed with no significant incremental U.S. tax. However, to the extent that we repatriate funds from non-U.S. subsidiaries for which we assert permanent reinvestment to fund our U.S. operations, we would be required to accrue and pay applicable non-U.S. taxes. As of 31 December 2022, we currently have no plans to repatriate funds from subsidiaries for which we assert permanent reinvestment.

Share repurchases are made from time to time in accordance with management's balanced capital allocation strategy, subject to market conditions and regulatory requirements. In February 2022, our Board of Directors authorized the repurchase of up to $3.0 billion of the Company's ordinary shares (2022 Authorization) upon the completion of our prior share repurchase program of up to $2.0 billion of its ordinary shares which was authorized in 2021 (2021 Authorization). During the year ended 31 December 2022, the Company repurchased and canceled $1,200.0 million of its ordinary shares leaving approximately $200 million remaining under the 2021 Authorization as of 31 December 2022.

We expect to pay a competitive and growing dividend. Since the launch of Trane Technologies in March 2020, we have increased our quarterly share dividend by 26%, from $0.53 to $0.67 per ordinary share, or $2.12 to $2.68 per share annualized. All four 2022 quarterly dividends were paid during the year ended 31 December 2022. In February 2023, our Board of Directors declared an increase in our quarterly share dividend by 12%, from $0.67 to $0.75 per ordinary share, or $2.68 to $3.00 per share annualized starting in the first quarter of 2023.

We continue to actively manage and strengthen our business portfolio to meet the current and future needs of our customers. We achieve this partly through engaging in research and development and sustaining activities and partly through acquisitions. Sustaining activities include costs incurred to reduce production costs, improve existing products, create custom solutions for customers and provide support to our manufacturing facilities. Our research and development and sustaining costs account for approximately two percent of annual *Net revenues.* Each year, we make investments in new product development and new technology innovation as they are key factors in achieving our strategic objectives as a leader in the climate sector. In addition, we make investments in technology and business for our operational sustainability programs. For example, during the year ended 31 December 2022, we invested in onsite solar energy generation systems at our Pueblo, Colorado and Monterrey, Mexico facilities to generate electricity to offset fossil based electricity purchased from the grid. We ramped up operations of the onsite solar system at our Zhongshan, China facility. Two key factories in China (Taicang and Zhongshan) recently entered into supply agreements to receive a significant quantity of electricity generated from 100 percent renewable sources. We also transitioned to a next generation refrigerant with low global warming potential (GWP) for transport equipment manufactured at our Arecibo, Puerto Rico facility and are actively working to transition to low GWP refrigerant on our first commercial product at our Pueblo, Colorado facility. We also completed a major step to decarbonize our Charmes, France facility by shifting from a natural gas fueled hot water heating system to Trane Technologies' latest heat pump system. This project is a dual benefit of reducing Scope 1 carbon and serving as a heat pump system show case for our customer engagement. These actions represent important steps to reduce our Scope 1 and Scope 2 carbon emissions and improve our customer's carbon performance over the operating life of Trane Technologies' cooling equipment. Furthermore, during the year ended 31 December 2022, we also completed implementation of processing equipment for our Tyler, Texas facility to fully achieve zero waste to landfill. These Leading by Example successes did not result in material expenditures for the year ended 31 December 2022.

In pursuing our business strategy, we routinely conduct discussions, evaluate targets and enter into agreements regarding possible acquisitions, divestitures, joint ventures and equity investments. Since 2020, we acquired several businesses, entered into joint ventures and invested in companies that complement existing products and services further enhancing our product portfolio. During the years ended 31 December 2022 and 31 December 2021, we deployed capital of approximately $256 million and $340 million, respectively attributable to acquisitions and equity investments.

We incur costs associated with restructuring initiatives intended to result in improved operating performance, profitability and working capital levels. Actions associated with these initiatives may include workforce reductions, improving manufacturing productivity, realignment of management structures and rationalizing certain assets. Post separation, we have reduced costs by approximately $240 million through 31 December 2022 and expect to reduce costs by an additional $60 million by 2023 for a total of $300 million in total annual savings under our transformation initiatives. In order to achieve these cost savings, we anticipate to incur costs up to $150 million through 2023. We have incurred approximately $130 million of costs cumulatively through 31 December 2022. We believe that our existing cash flow, committed credit lines and access to the capital markets will be sufficient to fund share repurchases, dividends, research and development, sustaining activities, business portfolio changes and ongoing restructuring actions.

Certain of our subsidiaries entered into Funding Agreements with Aldrich and Murray pursuant to which those subsidiaries are obligated, among other things, to pay the costs and expenses of Aldrich and Murray during the pendency of the Chapter 11 cases to the extent distributions from their respective subsidiaries are insufficient to do so and to provide an amount for the funding for a trust established pursuant to section 524(g) of the Bankruptcy Code, to the extent that the other assets of Aldrich and Murray are insufficient to provide the requisite trust funding. During the third quarter of 2021, Aldrich and Murray filed a motion with the Bankruptcy Court to create a $270.0 million QSF. The funds held in the QSF would be available to provide funding for the Section 524(g) Trust upon effectiveness of the Plan. On January 27, 2022, the Bankruptcy Court granted the request to fund the QSF, which was funded on 2 March 2022.

As the COVID-19 global pandemic impacts both the broader economy and our operations, we will continue to assess our liquidity needs and our ability to access capital markets. A continued worldwide disruption could materially affect economies and financial markets worldwide, resulting in an economic downturn that could affect demand for our products, our ability to obtain financing on favorable terms and otherwise adversely impact our business, financial condition and results of operations.

Liquidity

The following table contains several key measures of our financial condition and liquidity at the periods ended 31 December:

	2022	2021
	$m	$m
Cash at bank and in hand	1,220.5	2,159.2
Short-term borrowings and current maturities of long-term debt	1,048.0	350.4
Long-term debt	3,788.3	4,491.7
Total debt	4,836.3	4,842.1
Total Trane Technologies plc shareholders' equity	6,088.6	6,255.9
Total equity	6,105.2	6,273.1
Debt-to-total capital ratio	44.2 %	43.6 %

Debt and Credit Facilities

As of 31 December 2022, our short-term obligations primarily consist of $699.7 million of long-term debt that matures in June 2023 and $340.8 million of fixed rate debentures that contain a put feature that the holders may exercise on each anniversary of the issuance date. If exercised, we are obligated to repay in whole or in part, at the holder's option, the outstanding principal amount (plus accrued and unpaid interest) of the debentures held by the holder. We also maintain a commercial paper program which is used for general corporate purposes. Under the program, the maximum aggregate amount of unsecured commercial paper notes available to be issued, on a private placement basis, is $2.0 billion as of 31 December 2022. We had no commercial paper outstanding at 31 December 2022 and 31 December 2021. See Note 24 to the Consolidated Financial Statements for additional information regarding the terms of our short-term obligations.

Our long-term obligations primarily consist of long-term debt with final maturity dates ranging between 2024 and 2049. In addition, we maintain two $1.0 billion senior unsecured revolving credit facilities, one of which matures in June 2026 and the other which matures in April 2027. The facilities provide support for our commercial paper program and can be used for working capital and other general corporate purposes. Total commitments of $2.0 billion were unused at 31 December 2022 and 31 December 2021. See Note 24 to the Consolidated Financial Statements and further below in *Supplemental Guarantor Financial Information* for additional information regarding the terms of our long-term obligations and their related guarantees.

Cash Flows

The following table reflects the major categories of cash flows for the years ended 31 December, respectively. For additional details, please see the Consolidated Statements of Cash Flows in the Consolidated Financial Statements.

	2022	**2021**
	$m	**$m**
Net cash provided by (used in) continuing operating activities	1,698.7	1,594.4
Net cash provided by (used in) continuing investing activities	(539.8)	(545.7)
Net cash provided by (used in) continuing financing activities	(1,852.2)	(2,127.6)

Operating Activities

Net cash provided by continuing operating activities for the year ended 31 December 2022 was $1,698.7 million, of which net income provided $2,248.8 million after adjusting for non-cash transactions. Net cash provided by continuing operating activities for the year ended 31 December 2021 was $1,594.4 million, of which net income provided $1,837.5 million after adjusting for non-cash transactions. The year-over-year increase in net cash provided by continuing operating activities was primarily due to higher net earnings, partially offset by higher working capital balances in the current year, the funding of the continuing operations component of the QSF for $91.8 million and a compensation related payment to a retired executive.

Investing Activities

Cash flows from investing activities represents inflows and outflows regarding the purchase and sale of assets. Primary activities associated with these items include capital expenditures, proceeds from the sale of property, plant and equipment, acquisitions, investments in joint ventures and divestitures. During the year ended 31 December 2022, net cash used in investing activities from continuing operations was $539.8 million. The primary drivers of the usage were attributable to capital expenditures of $291.8 million and acquisition of businesses, which totaled $234.7 million, net of cash acquired. During the year ended 31 December 2021, net cash used in investing activities from continuing operations was $545.7 million. The primary drivers of the usage were attributable to the acquisition of businesses, which totaled $269.2 million, net of cash acquired, $223.0 million of capital expenditures and other investing activities of $68.6 million, primarily related to investment in several companies that complement existing products and services further enhancing our product portfolio.

Financing Activities

Cash flows from financing activities represent inflows and outflows that account for external activities affecting equity and debt. Primary activities associated with these actions include paying dividends to shareholders, repurchasing our own shares, issuing our stock and debt transactions. During the year ended 31 December 2022, net cash used in financing activities from continuing operations was $1,852.2 million. The primary drivers of the outflow related to the the repurchase of $1,200.2 million in ordinary shares and dividends paid to ordinary shareholders of $620.2 million. During the year ended 31 December 2021, net cash used in financing activities from continuing operations was $2,127.6 million. The primary drivers of the outflow related to the repurchase of $1,100.3 million in ordinary shares, dividends paid to ordinary shareholders of $561.1 million and the repayment of long-term debt of $432.5 million.

Free Cash Flow

Free cash flow is a non-GAAP measure and defined as *Net cash provided by (used in) continuing operating activities* adjusted for capital expenditures, cash payments for restructuring, transformation costs, the continuing operations component of the QSF funding, payout of executive compensation and an insurance settlement on a property claim in Q3 2022. This measure is useful to management and investors because it is consistent with management's assessment of our operating cash flow performance. The most comparable GAAP measure to free cash flow is *Net cash provided by (used in) continuing operating activities*. Free cash flow may not be comparable to similarly-titled measures used by other companies and should not be considered a substitute for *Net cash provided by (used in) continuing operating activities* in accordance with GAAP.

A reconciliation of *Net cash provided by (used in) continuing operating activities* to free cash flow the years ended 31 December is as follows:

	2022 $m	2021 $m
Net cash provided by (used in) continuing operating activities	1,698.7	1,594.4
Capital expenditures	(291.8)	(223.0)
Cash payments for restructuring	17.9	38.1
Transformation costs paid	9.6	21.4
QSF funding (continuing operations component)	91.8	—
Compensation related payment to a retired executive	64.3	—
Insurance settlement on property claim in Q3 2022	(25.0)	—
Free cash flow (1)	1,565.5	1,430.9

(1) Represents a non-GAAP measure.

Pension Plans

Our investment objective in managing defined benefit plan assets is to ensure that all present and future benefit obligations are met as they come due. We seek to achieve this goal while trying to mitigate volatility in plan funded status, contribution and expense by better matching the characteristics of the plan assets to that of the plan liabilities. Our approach to asset allocation is to increase fixed income assets as the plan's funded status improves. We monitor plan funded status and asset allocation regularly in addition to investment manager performance. In addition, we monitor the impact of market conditions on our defined benefit plans on a regular basis. None of our defined benefit pension plans have experienced a significant impact on their liquidity due to market volatility. See Note 27 to the Consolidated Financial Statements for additional information regarding pensions.

Capital Resources

Based on historical performance and current expectations, we believe our cash at bank and in hand balance, the cash generated from our operations, our committed credit lines and our expected ability to access capital markets will satisfy our working capital needs, capital expenditures, dividends, share repurchases, upcoming debt maturities, and other liquidity requirements associated with our operations for the foreseeable future.

Capital expenditures were $291.8 million and $223.0 million for the years ended 31 December 2022 and 2021, respectively. Our investments continue to improve manufacturing productivity, reduce costs, provide environmental enhancements, upgrade information technology infrastructure and security and advanced technologies for existing facilities. The capital expenditure program for 2023 is estimated to be approximately 1.5% to 2.0% of revenues, including amounts approved in prior periods. Many of these projects are subject to review and cancellation at our option without incurring substantial charges.

Capitalization

In addition to cash on hand and operating cash flow, we maintain significant credit availability under our Commercial Paper Program. Our ability to borrow at a cost-effective rate under the Commercial Paper Program is contingent upon maintaining an investment-grade credit rating. As of 31 December 2022, our credit ratings were as follows, remaining unchanged from 2021:

	Short-term	Long-term
Moody's	P-2	Baa2
Standard and Poor's	A-2	BBB

The credit ratings set forth above are not a recommendation to buy, sell or hold securities and may be subject to revision or withdrawal by the assigning rating organization. Each rating should be evaluated independently of any other rating.

Our public debt does not contain financial covenants and our revolving credit lines have a debt-to-total capital covenant of 65%. As of 31 December 2022, our debt-to-total capital ratio was significantly beneath this limit.

Contractual Obligations

Our contractual cash obligations include required payments of long-term debt principal and interest, purchase obligations and expected obligations under our pension and postretirement benefit plans. In addition, we have required payments of operating leases, tax on profit on ordinary activities and expected obligations under the Funding agreement, environmental and product liability matters. For additional information regarding leases, tax on profit on ordinary activities, including unrecognized tax benefits, and contingent liabilities, see Note 16, Note 11 and Note 29, respectively, to the Consolidated Financial Statements. Our material cash requirements include the following contractual and other obligations.

Debt

At 31 December 2022, we had outstanding aggregate long-term debt principal payments of $4,863.0 million, with $1,048.3 million payable within 12 months. The amount payable within 12 months includes $340.8 million of debt redeemable at the option of the holder. The scheduled maturities of these bonds range between 2027 and 2028. Future interest payments on long-term debt total $2,186.5 million, with $199.7 million payable within 12 months. See Note 24 to the Consolidated Financial Statements for additional information regarding debt.

Purchase Obligations

Purchase obligations include commitments under legally enforceable contracts or purchase orders. At 31 December 2022, we had purchase obligations of $1,239.2 million, which are primarily payable within 12 months.

Pensions

It is our objective to contribute to the pension plans to ensure adequate funds are available in the plans to make benefit payments to plan participants and beneficiaries when required. We currently expect that we will contribute approximately $69 million to our enterprise plans worldwide in 2023. The timing and amounts of future contributions are dependent upon the funding status of the plan, which is expected to vary as a result of changes in interest rates, returns on underlying assets, and other factors. See Note 27 to the Consolidated Financial Statements for additional information regarding pensions.

Postretirement Benefits Other than Pensions

We fund postretirement benefit costs principally on a pay-as-you-go basis as medical costs are incurred by covered retiree populations. Benefit payments, which are net of expected plan participant contributions and Medicare Part D subsidy, are expected to be approximately $35 million in 2023. See Note 27 to the Consolidated Financial Statements for additional information regarding postretirement benefits other than pensions.

Supplemental Guarantor Financial Information

The Company and certain of its 100% directly or indirectly owned subsidiaries provide guarantees of public debt issued by other 100% directly or indirectly owned subsidiaries of Plc. The following table shows our guarantor relationships as of 31 December 2022:

Parent, issuer or guarantors	Notes issued	Notes guaranteed
Trane Technologies plc (Plc)	None	All registered notes and debentures
Trane Technologies Irish Holdings Unlimited Company (TT Holdings)	None	All notes issued by TTFL and TTC HoldCo
Trane Technologies Lux International Holding Company S.à.r.l. (TT International)	None	All notes issued by TTFL and TTC HoldCo
Trane Technologies Global Holding Company Limited (TT Global)	None	All notes issued by TTFL and TTC HoldCo
Trane Technologies Financing Limited (TTFL)	3.550% Senior notes due 2024 3.500% Senior notes due 2026 3.800% Senior notes due 2029 4.650% Senior notes due 2044 4.500% Senior notes due 2049	All notes and debentures issued by TTC HoldCo and TTC
Trane Technologies HoldCo Inc. (TTC HoldCo)	4.250% Senior notes due 2023 3.750% Senior notes due 2028 5.750% Senior notes due 2043 4.300% Senior notes due 2048	All notes issued by TTFL
Trane Technologies Company LLC (TTC)	7.200% Debentures due 2023-2025 6.480% Debentures due 2025 Puttable debentures due 2027-2028	All notes issued by TTFL and TTC HoldCo

Each subsidiary debt issuer and guarantor is owned 100% directly or indirectly by the Company. Each guarantee is full and unconditional, and provided on a joint and several basis. There are no significant restrictions of the Parent Company, or any guarantor, to obtain funds from its subsidiaries, such as provisions in debt agreements that prohibit dividend payments, loans or advances to the parent by a subsidiary. The following tables present summarized financial information for the Parent Company and subsidiary debt issuers and guarantors on a combined basis (together, "obligor group") after elimination of intercompany transactions and balances based on the Company's legal entity ownerships and guarantees outstanding at 31 December 2022. Our obligor groups as of 31 December 2022 were as follows: Obligor group 1 consists of Plc, TT Holdings, TT International, TT Global, TTFL, TTC HoldCo and TTC; Obligor group 2 consists of Plc, TTFL and TTC.

PRINCIPAL RISKS

Our business, financial condition, results of operations, and cash flows are subject to a number of risks that could cause the actual results and conditions to differ materially from those projected in forward-looking statements contained in this report. The risks set forth below are those we consider most significant. We face other risks, however, that we do not currently perceive to be material which could cause actual results and conditions to differ materially from our expectations. You should evaluate all risks before you invest in our securities. If any of the risks actually occur, our business, financial condition, results of operations or cash flows could be adversely impacted. In that case, the trading price of our ordinary shares could decline, and you may lose all or part of your investment.

Risks Related to Economic Conditions

The full extent to which a resurgence of COVID-19 or spread of new infectious diseases will affect us will depend on future developments that are highly uncertain and cannot be accurately predicted.

The COVID-19 pandemic has had widespread, rapidly evolving and unpredictable impacts on global society, economics, financial markets and business practices. Government efforts to contain COVID-19 have included travel bans and restrictions, quarantines, shelter in place orders and shutdowns. Our business and global operations have been impacted by supply chain delays, higher material costs and product prices, lower revenues for some quarters, and unfavorable foreign currency exchange rates. The COVID-19 pandemic has also at times affected our ability to obtain needed products and services, operate in certain locations, maintain our distribution channels, and attract and retain talent. We continue to closely monitor the impact of the COVID-19 pandemic on all aspects of our business and geographies, including how it has and will impact our customers, team members, suppliers, vendors, business partners and distribution channels.

The extent to which COVID-19 or other widespread outbreaks of infectious disease impact our business going forward will depend on factors such as the duration and scope of infections; governmental, business, and individuals' actions in response to the health crisis; and the impact on economic activity including the possibility of financial market instability or recession. How a resurgence of COVID-19 or other potential global pandemics will affect us will depend on future developments that are highly uncertain and cannot be accurately predicted. Such events may also exacerbate other risks discussed herein, any of which could have a material adverse effect on us.

Our global operations subject us to economic risks.

Our global operations are dependent upon products manufactured, purchased and sold in the U.S. and internationally. These activities are subject to risks that are inherent in operating globally, including:

- changes in local laws and regulations including potential imposition of currency restrictions, new or changing tax laws and other restraints;
- limitation of ownership rights, including expropriation of assets by a local government, and limitation on the ability to repatriate earnings;
- sovereign debt crises and currency instability in developed and developing countries;
- trade protection measures such as import or export restrictions and requirements, the imposition of burdensome tariffs and quotas or revocation or material modification of trade agreements;
- difficulty in staffing and managing global operations including supply chain disruptions which may be exacerbated by pandemics or other events affecting the supply of labor, materials and components;
- difficulty of enforcing agreements, collecting receivables and protecting assets through non-U.S. legal systems;
- national and international conflict, including war, civil disturbances and terrorist acts; and
- recessions, economic downturns, price instability, slowing economic growth and social and political instability.

These risks could increase our cost of doing business internationally, increase our counterparty risk, disrupt our operations, disrupt the ability of suppliers and customers to fulfill their obligations, limit our ability to sell products in certain markets and have a material adverse impact on our results of operations, financial condition, and cash flows.

Commodity shortages, supply chain risks and price increases could adversely affect our financial results.

We rely on suppliers to secure commodities, particularly steel and non-ferrous metals, and third-party parts and components required for the manufacture of our products. A disruption in deliveries from our suppliers or decreased availability of commodities and third-party parts and components could have an adverse effect on our ability to meet our commitments to customers or increase our operating costs. Disruptions have occurred due to the COVID-19 pandemic, the Russia - Ukraine conflict, supplier capacity constraints, labor shortages, port congestion, logistical problems and other issues. Some of these disruptions have resulted in supply chain constraints affecting our business including our ability to timely produce and ship our products. The unavailability of some commodities and third-party parts and components could have a material adverse impact on our results of operations and cash flows.

Volatility in the prices of commodities and third-party parts and components or the impact of inflationary increases could increase the costs of our products and services. We may not be able to pass on these costs to our customers and this could have a material adverse impact on our results of operations and cash flows. Conversely, in the event there is deflation, we may experience pressure from our customers to reduce prices. There can be no assurance that we would be able to reduce our costs (through negotiations with suppliers or other measures) to offset any such price concessions which could adversely impact results of operations and cash flows. While we may use financial derivatives or supplier price locks to hedge against this volatility, by using these instruments we may potentially forego the benefits that might result from favorable fluctuations in prices and could experience lower margins in periods of declining commodity prices. In addition, while hedging activity may minimize near-term volatility of the commodity prices, it would not protect us from long-term commodity price increases.

Some of our purchases are from sole or limited source suppliers for reasons of cost effectiveness, uniqueness of design, or product quality. If these suppliers encounter financial or operating difficulties, we might not be able to quickly establish or qualify replacement sources of supply.

We face significant competition in the markets that we serve.

The markets that we serve are highly competitive. We compete worldwide with a number of other manufacturers and distributors that produce and sell similar products. There has been consolidation and new entrants (including non-traditional competitors) within our industries and there may be future consolidation and new entrants which could result in increased competition and significantly alter the dynamics of the competitive landscape in which we operate. Due to our global footprint we are competing worldwide with large companies and with smaller, local operators who may have customer, regulatory or economic advantages in the geographies in which they are located. In addition, some of our competitors may employ pricing and other strategies that are not traditional. While we understand our markets and competitive landscape, there is always the risk of disruptive technologies coming from companies that are not traditionally manufacturers or service providers of our products.

Our growth is dependent, in part, on the timely development, commercialization and acceptance of new and enhanced products and services.

We must timely develop and commercialize new and enhanced products and services in a rapidly changing technological and business environment in order to remain competitive in our current and future markets and in order to continue to grow our business. The development and commercialization of new products and the modification of existing products and services to meet customer demands require a significant investment of resources and an anticipation of the impact of new technologies and the ability to compete with others who may have superior resources in specific technology domains. We cannot provide any assurance that any new or enhanced product or service will be successfully commercialized in a timely manner, if ever, or, if commercialized, will result in returns greater than our investment. Investment in a product or service could divert our attention and resources from other projects that become more commercially viable in the market. We also cannot provide any assurance that any new or enhanced product or service will be accepted by our current and future markets. Failure to timely develop new and enhanced products and services that are accepted by these markets could have a material adverse impact on our competitive position, results of operations, financial condition, and cash flows.

The capital and credit markets are important to our business.

Instability in U.S. and global capital and credit markets, including market disruptions, limited liquidity and interest rate volatility, or reductions in the credit ratings assigned to us by independent rating agencies could reduce our access to capital markets or increase the cost of funding our short and long term credit requirements. In particular, if we are unable to access capital and credit markets on terms that are acceptable to us, we may not be able to make certain investments or fully execute our business plans and strategies.

Our suppliers and customers are also dependent upon the capital and credit markets. Limitations on the ability of customers, suppliers or financial counterparties to access credit at interest rates and on terms that are acceptable to them could lead to insolvencies of key suppliers and customers, limit or prevent customers from obtaining credit to finance purchases of our products and services and cause delays in the delivery of key products from suppliers.

Currency exchange rate fluctuations and other related risks may adversely affect our results.

We are exposed to a variety of market risks, including the effects of changes in currency exchange rates.

We have operations throughout the world that manufacture and sell products in various international markets. As a result, we are exposed to movements in exchange rates of various currencies against the U.S. dollar as well as against other currencies throughout the world.

Many of our non-U.S. operations have a functional currency other than the U.S. dollar, and their results are translated into U.S. dollars for reporting purposes. Therefore, our reported results will be higher or lower depending on the weakening or strengthening of the U.S. dollar against the respective foreign currency.

We use derivative instruments to hedge those material exposures that cannot be naturally offset. The instruments utilized are viewed as risk management tools, and are not used for trading or speculative purposes. To minimize the risk of counterparty non-performance, derivative instrument agreements are made only through major financial institutions with significant experience in such derivative instruments.

We also face risks arising from the imposition of exchange controls and currency devaluations. Exchange controls may limit our ability to convert foreign currencies into U.S. dollars or to remit dividends and other payments by our foreign subsidiaries or businesses located in or conducted within a country imposing controls. Currency devaluations result in a diminished value of funds denominated in the currency of the country instituting the devaluation.

Changes in U.S. or foreign trade policies and other factors beyond our control may adversely impact our business and operating results

Geopolitical tensions and trade disputes can disrupt supply chains and increase the cost of our products. This could cause our products to be more expensive for customers, which could reduce the demand for or attractiveness of such products. In addition, a geopolitical conflict in a region where we operate could disrupt our ability to conduct business operations in that region. Beyond tariffs and sanctions, countries also could adopt other measures, such as controls on imports or exports of goods, technology, or data, which could adversely affect our operations and supply chain and limit our ability to offer our products and services as intended. These kinds of restrictions could be adopted with little to no advanced notice, and we may not be able to effectively mitigate the adverse impacts from such measures. Political uncertainty surrounding trade or other international disputes also could have a negative impact on customer confidence and willingness to spend money, which could impair our future growth.

The military conflict between Russia and Ukraine has created a humanitarian crisis, materially impacted economic activities and may materially impact our global and regional operations.

The global economy has been negatively impacted by the military conflict between Russia and Ukraine. Governments including the U.S., United Kingdom, and those of the European Union have imposed export controls on certain products and financial and economic sanctions on certain industry sectors and parties in Russia which has triggered retaliatory sanctions by the Russian government and its allies. The outcome and future impacts of the conflict remain highly uncertain, continue to evolve and may grow more severe the longer the military action and sanctions remain in effect. Risks associated with the Russian-Ukrainian conflict include, but are not limited to, adverse effects on political developments and on general economic conditions, including inflation and consumer spending; disruptions to our supply chains; disruptions to our information systems, including through network failures, malicious or disruptive software, or cyberattacks; trade disruptions; energy shortages or rationing that may adversely impact our manufacturing facilities and consumer spending, particularly in Europe; rising fuel and/or rising costs of producing, procuring and shipping our products; our exposure to foreign currency exchange rate fluctuations; and constraints, volatility or disruption in the financial markets.

When Russia invaded Ukraine in February 2022, we immediately halted new orders and shipments into and out of Russia and Belarus. As of December 31, 2022, we have exited all business activity within these markets. To date, the Russia-Ukraine war has not had a material adverse effect on our business or financial performance.

We have no way to predict the progress or outcome of the situation in Ukraine. Until there is a peaceful resolution, the conflict could have a material adverse effect on our operations, results of operations, financial condition, liquidity, growth prospects and business outlook.

Risks Related to Litigation

Material adverse legal judgments, fines, penalties or settlements could adversely affect our results of operations or financial condition.

We are currently and may in the future become involved in legal proceedings and disputes incidental to the operation of our business or the business operations of previously-owned entities. Our business may be adversely affected by the outcome of these proceedings and other contingencies (including, without limitation, contract claims or other commercial disputes, product liability, product defects and asbestos-related matters) that cannot be predicted with certainty. Moreover, any insurance or indemnification rights that we may have may be insufficient or unavailable to protect us against the total aggregate amount of losses sustained as a result of such proceedings and contingencies. As required by generally accepted accounting principles in the United States, we establish reserves based on our assessment of contingencies. Subsequent developments in legal proceedings and other events could affect our assessment and estimates of the loss contingency recorded as a reserve and we may be required to make additional material payments, which could have a material adverse impact on our liquidity, results of operations, financial condition, and cash flows.

The Aldrich and Murray Chapter 11 cases involve various risks and uncertainties that could have a material effect on us.

Our indirect wholly-owned subsidiaries Aldrich and Murray have each filed a voluntary petition for reorganization under the Bankruptcy Code in the Bankruptcy Court. The goal of these Chapter 11 filings is to resolve equitably and permanently all current and future asbestos-related claims in a manner beneficial to claimants, Aldrich and Murray through court approval of a plan of reorganization that would create a trust pursuant to section 524(g) of the Bankruptcy Code, establish claims resolution procedures for all current and future asbestos-related claims against Aldrich and Murray and channel such claims to the trust for resolution in accordance with those procedures. Such a resolution, if achieved, would likely include a channeling injunction to enjoin asbestos claims resolved in the Chapter 11 cases from being filed or pursued against us or our affiliates. The Chapter 11 cases remain pending as of 10 February 2023.

There are a number of risks and uncertainties associated with these Chapter 11 cases, including, among others, those related to:

- the ultimate determination of the asbestos liability of Aldrich and Murray to be satisfied under a Chapter 11 plan and the ability to consummate the settlement reached with the court appointed legal representative of future asbestos claimants (the FCR);
- the outcome of negotiations with the committee representing current asbestos claimants (ACC) and the FCR and other participants in the Chapter 11 cases, including insurers, concerning, among other things, the size and structure of a potential section 524(g) trust to pay the asbestos liability of Aldrich and Murray and the means for funding that trust;
- the actions of representatives of the asbestos claimants, including the ACC's pursuit of certain causes of action against us, following the Bankruptcy Court's grant of the ACC's motion seeking standing to investigate and pursue certain causes of action at a hearing held on 27 January 2022, and other potential actions by the ACC in opposition to, or otherwise inconsistent with, the efforts by Aldrich and Murray to diligently prosecute the Chapter 11 cases and ultimately seek Bankruptcy Court approval of a plan of reorganization;
- the decisions of the Bankruptcy Court relating to numerous substantive and procedural aspects of the Chapter 11 cases, including in connection with a proceeding by Aldrich and Murray to estimate their aggregate liability for asbestos claims, following the Bankruptcy Court's grant of their motion seeking such a proceeding, and other efforts by Aldrich and Murray to diligently prosecute the Chapter 11 cases and ultimately seek Bankruptcy Court approval of a plan of reorganization, whether such decisions are in response to actions of representatives of the asbestos claimants or otherwise;
- the risk that Aldrich and Murray may be unable to obtain the necessary approvals of the Bankruptcy Court or the United States District Court for the Western District of North Carolina (the District Court) of a plan of reorganization;
- the risk that any orders approving a plan of reorganization and issuing the channeling injunction do not become final;
- the terms and conditions of any plan of reorganization that is ultimately confirmed in the Chapter 11 cases;
- delays in the confirmation or effective date of a plan of reorganization due to factors beyond the Company's control;
- the risk that the ultimate amount required under any final plan of reorganization may exceed the amounts agreed to with the FCR in the Plan;
- the risk that the insurance carriers do not support the Plan and the risk that the ACC objects to the Plan; and
- the decisions of appellate courts regarding approval of a plan of reorganization or relating to orders of the Bankruptcy Court or the District Court that may be appealed.

The ability of Aldrich and Murray to successfully reorganize and resolve their asbestos liabilities will depend on various factors, including their ability to reach agreements with representatives of the asbestos claimants on the terms of a plan of reorganization that satisfies all applicable legal requirements and to obtain the requisite court approvals of such plan, and remains subject to the risks and uncertainties described above. We cannot ensure that Aldrich and Murray can successfully reorganize, nor can we give any assurances as to the amount of the ultimate obligations under the Funding Agreements or any plan of reorganization, or the resulting impact on our financial condition, results of operations or future prospects. We also are unable to predict the timing of any of the foregoing matters or the timing for a resolution of the Chapter 11 cases, all of which could have an impact on us.

It also is possible that, in the Chapter 11 cases, various parties will be successful in bringing claims against us and other related parties, including by successfully challenging the 2020 corporate restructuring, consolidating entities and/or raising allegations that we are liable for the asbestos-related liabilities of Aldrich and Murray as set forth in certain pleadings filed by the ACC in the Chapter 11 cases. Although we believe we have no such responsibility for liabilities of Aldrich and Murray, except indirectly through our obligation to provide funding to Aldrich and Murray under the terms of the Funding Agreements, we cannot provide assurances that such claims will not be successful.

In sum, the outcome of the Chapter 11 cases is uncertain and there is uncertainty as to what extent we may have to contribute to a section 524(g) trust under the Funding Agreements.

Risks Related to Cybersecurity and Technology

We are subject to risks relating to our information technology systems.

We rely extensively on information technology systems, some of which are supported by third party vendors including cloud-based systems and managed service providers, to manage and operate our business. We invest in new information technology systems designed to improve our operations. We have had failures of these systems in the past and may have failures of these systems in the future. If these systems cease to function properly, if these systems experience security breaches or disruptions or if these systems do not provide the anticipated benefits, our ability to manage our operations could be impaired, which could have a material adverse impact on our results of operations, financial condition, and cash flows.

Security breaches or disruptions of the technology systems, infrastructure or products of the Group or our vendors could negatively impact our business and financial results.

Our information technology systems, networks and infrastructure and technology embedded in certain of our control products have been and are vulnerable to cyber attacks and unauthorized security intrusions. From time to time, vulnerabilities in our products are discovered and updates are made available, but customers are vulnerable until those updates are applied or other mitigating actions are taken by customers to protect their systems and networks. Like other large companies, certain of our information technology systems and the systems of our vendors have been subject to computer viruses, malicious code, unauthorized access, phishing attempts, denial-of-service attacks and other cyber attacks and we expect that we and our vendors will be subject to similar attacks in the future.

The methods used to obtain unauthorized access, disable or degrade service, or sabotage information technology systems are constantly changing and evolving. Despite having instituted security policies and business continuity plans, and implementing and regularly reviewing and updating processes and procedures to protect against unauthorized access and requiring similar protections from our vendors, the ever-evolving threats mean we are continually evaluating and adapting our systems and processes and ask our vendors to do the same, and there is no guarantee that such systems and processes will be adequate to safeguard against all data security breaches or misuses of data. Hardware, software or applications we develop or obtain from third parties sometimes contain defects in design or deployment or other problems that could unexpectedly result in security breaches or disruptions. Open source software components embedded into certain software that we use has in the past contained vulnerabilities and others may be discovered in the future. Such vulnerabilities can expose our systems to malware or allow third party access to data. While these issues are not specific to our Company, we are required to take action when such vulnerabilities are identified including patching and modification to certain of our products and enterprise systems. To date, there has been no material business impact from such vulnerabilities, but we continue to monitor these issues and our responses are ongoing. Our systems, networks and certain of our control products and those of our vendors are vulnerable to system damage, malicious attacks from hackers, employee errors or misconduct, viruses, power and utility outages, and other catastrophic events. Any of these incidents could cause significant harm to our business by negatively impacting our business operations, compromising the security of our proprietary information or the personally identifiable information of our customers, employees and business partners, exposing us to litigation or other legal actions against us or the imposition of penalties, fines, fees or liabilities. Such events could have a material adverse impact on our results of operations, financial condition and cash flows and could damage our reputation which could adversely affect our business. Our insurance coverage may not be adequate to cover all the costs related to a cybersecurity attack or disruptions resulting from such attacks. Customers are increasingly requiring cybersecurity protections and mandating cybersecurity standards in our products, and we may incur additional costs to comply with such demands.

Data privacy and protection laws are evolving and present increasing compliance challenges.

The regulatory environment surrounding data privacy and protection is increasingly demanding, with the frequent imposition of new and changing requirements across businesses and geographic areas. We are required to comply with complex regulations when collecting, transferring and using personal data, which increases our costs, affects our competitiveness and can expose us to substantial fines or other penalties.

Intellectual property infringement claims of others and the inability to protect our intellectual property rights could harm our competitive position.

Our intellectual property (IP) rights are important to our business and include numerous patents, trademarks, copyrights, trade secrets, proprietary technology, technical data, business processes, and other confidential information. Although in aggregate we consider our intellectual property rights to be valuable to our operations, we do not believe that our business is materially dependent on a single intellectual property right or any group of them. In our opinion, engineering, production skills and experience are more responsible for our market position than our patents and/or licenses.

Nonetheless, this intellectual property may be subject to challenge, infringement, invalidation or circumvention by third parties. Despite extensive security measures, our intellectual property may be subject to misappropriation through unauthorized access of our information technology systems, employee theft, or theft by private parties or foreign actors, including those affiliated with or controlled by state actors. Our business and competitive position could be harmed by such events. Our ability to protect our intellectual property rights by legal recourse or otherwise may be limited, particularly in countries where laws or enforcement practices are inadequate or undeveloped. Our inability to enforce our IP rights under any of these circumstances could have an impact on our competitive position and business.

Risks Related to Regulatory Matters

Our reputation, ability to do business and results of operations could be impaired by improper conduct by any of our employees, agents or business partners.

We are subject to regulation under a wide variety of U.S. federal and state and non-U.S. laws, regulations and policies, including laws related to anti-corruption, anti-human trafficking, anti-bribery, export and import compliance, anti-trust and money laundering, due to our global operations. We cannot provide assurance our internal controls will always protect us from the improper conduct of our employees, agents and business partners. Any violations of law or improper conduct could damage our reputation and, depending on the circumstances, subject us to, among other things, civil and criminal penalties, material fines, equitable remedies (including profit disgorgement and injunctions on future conduct), securities litigation and a general loss of investor confidence, any one of which could have a material adverse impact on our business prospects, financial condition, results of operations, cash flows, and the market value of our stock.

Our operations are subject to regulatory risks.

Our U.S. and non-U.S. operations are subject to a number of laws and regulations, including among others, laws related to the environment and health and safety. We have made, and will be required to continue to make, significant expenditures to comply with these laws and regulations. Any violations of applicable laws and regulations could lead to significant penalties, fines or other sanctions. Changes in current laws and regulations could require us to increase our compliance expenditures, cause us to significantly alter or discontinue offering existing products and services or cause us to develop new products and services. Altering current products and services or developing new products and services to comply with changes in the applicable laws and regulations could require significant research and development investments, increase the cost of providing the products and services and adversely affect the demand for our products and services. The U.S. federal government and various states and municipalities have enacted or may enact legislation intended to deny government contracts to U.S. companies that reincorporate outside of the U.S. or have reincorporated outside of the U.S or may take other actions negatively impacting such companies. If we are unable to effectively respond to changes to applicable laws and regulations, interpretations of applicable laws and regulations, or comply with existing and future laws and regulations, our competitive position, results of operations, financial condition and cash flows could be materially adversely impacted.

Global climate change and related regulations could negatively affect our business.

Climate change presents immediate and long-term risks to our Company and to our customers, with the risks expected to increase over time. Our products and operations are subject to and affected by environmental regulation by federal, state and local authorities in the U.S. and regulatory authorities with jurisdiction over our international operations, including with respect to the use, storage, and dependence upon refrigerants which are considered greenhouse gases. Refrigerants are essential to many of our products and there is concern regarding the global warming potential of such materials. As such, national, regional and international regulations and policies are being implemented to curtail their use. Some of these regulations could have a negative competitive impact on our company by requiring us to make costly changes to our products. As regulations reduce the use of the current class of widely used refrigerants, we are developing and selling our next generation products that utilize lower global warming potential solutions. There can be no assurance that climate change or environmental regulation or deregulation will not have a negative competitive impact on our ability to sell these products or that economic returns will match the investment that we are making in new product development. We face increasing complexity related to product design, the use of regulated materials, the associated energy consumption and efficiency related to the use of products, the transportation and shipping of products, climate change regulations, and the reuse, recycling and/or disposal of products and their components at end-of-use or useful life as we adjust to new and future requirements relating to our transition to a more circular economy. There continues to be a lack of consistent climate legislation, which creates economic and regulatory uncertainty. Such regulatory uncertainty extends to future incentives for energy efficient buildings and vehicles and costs of compliance, which may impact the demand for our products, obsolescence of our products and our results of operations.

Our climate commitment requires us to offer a full line of next generation products by 2030 without compromising safety or energy efficiency. Additionally, in 2019, we announced our 2030 commitment which targets reducing one gigaton – one billion metric tons – of carbon emissions (CO_2e) from our customers' footprint by 2030. While we are committed to pursuing these sustainability objectives, there can be no assurance that we will successfully achieve our commitments. Failure to meet these commitments could result in reputational harm to our company. Changes regarding climate risk management and practices may result in higher regulatory, compliance risks and costs.

Risks Related to Our Business Operations

Our business strategy includes acquiring businesses, product lines, technologies and capabilities, plants and other assets, entering into joint ventures and making investments that complement our existing businesses. We also occasionally divest businesses that we own. We may not identify acquisition or joint venture candidates or investment opportunities at the same rate as the past. Acquisitions, dispositions, joint ventures and investments that we identify could be unsuccessful or consume significant resources, which could adversely affect our operating results.

We continue to analyze and evaluate the acquisition and divestiture of strategic businesses and product lines, technologies and capabilities, plants and other assets, joint ventures and investments with the potential to, among other things, strengthen our industry position, to enhance our existing set of product and services offerings, to increase productivity and efficiencies, to grow turnover, earnings and cash flow, to help us stay competitive or to reduce costs. There can be no assurance that we will identify or successfully complete transactions with suitable candidates in the future, that we will consummate these transactions at rates similar to the past or that completed transactions will be successful. Strategic transactions may involve significant cash expenditures, debt incurrence, operating losses and expenses that could have a material adverse effect on our business, financial condition, results of operations and cash flows. Such transactions involve numerous other risks, including:

- diversion of management time and attention from daily operations;
- difficulties integrating acquired businesses, technologies and personnel into our business, including doing so without high costs;
- difficulties in obtaining and verifying the financial statements and other business and other due diligence information of acquired businesses;
- inability to obtain required regulatory approvals and/or required financing on favorable terms;
- potential loss of key employees, key contractual relationships or key customers of either acquired businesses or our business;
- assumption of the liabilities and exposure to unforeseen or undisclosed liabilities of acquired businesses and exposure to regulatory sanctions;
- inheriting internal control deficiencies;
- dilution of interests of holders of our common shares through the issuance of equity securities or equity-linked securities; and

- in the case of joint ventures and other investments, interests that diverge from those of our partners without the ability to direct the management and operations of the joint venture or investment in the manner we believe most appropriate to achieve the expected value.

Any acquisitions, divestitures, joint ventures or investments may ultimately harm our business, financial condition, results of operations and cash flows. There are additional risks related to our Reverse Morris Trust transaction, see "Risks Related to the Transaction" for more information.

Natural disasters, epidemics or other unexpected events may disrupt our operations, adversely affect our results of operations and financial condition, and may not be fully covered by insurance.

The occurrence of one or more catastrophic events including hurricanes, fires, earthquakes, floods and other forms of severe weather, health epidemics or pandemics or other contagious outbreaks or other catastrophic events in the U.S. or in other countries in which we operate or are located could adversely affect our operations and financial performance. Natural disasters, power outages, health epidemics or pandemics or other contagious outbreaks or other unexpected events could result in physical damage to and complete or partial closure of one or more of our plants, temporary or long-term disruption of our operations by causing business interruptions, material scarcity, price volatility or supply chain disruptions. Climate change is a risk multiplier with respect to these physical disasters in both frequency and severity and may affect our global business operations as a result. Existing insurance arrangements may not provide full protection for the costs that may arise from such events, particularly if such events are catastrophic in nature or occur in combination. The occurrence of any of these events could increase our insurance and other operating costs or harm our sales in affected areas.

Our business success depends on attracting, developing, and retaining highly qualified talent.

The skills, experience, and industry knowledge of our employees significantly benefit our operations and performance. The market for employees and leaders with certain skills and experiences is very competitive, and difficulty attracting, developing, and retaining members of our management team and key employees could have a negative effect on our business, operating results, and financial condition. Maintaining a positive and inclusive culture and work environment, offering attractive compensation, benefits, and development opportunities, and effectively implementing processes and technology that enable our employees to work effectively and efficiently are important to our ability to attract and retain employees.

Our business may be adversely affected by temporary work stoppages, union negotiations, labor disputes and other matters associated with our labor force.

Certain of our employees are covered by collective bargaining agreements or works councils. We experience from time-to-time temporary work stoppages, union negotiations, labor disputes and other matters associated with our labor force and some of these events could result in significant increases in our cost of labor, impact our productivity or damage our reputation. Additionally, a work stoppage at one of our suppliers could materially and adversely affect our operations if an alternative source of supply were not readily available. Stoppages by employees of our customers could also result in reduced demand for our products.

Risks Relating to Tax Matters

Changes in tax or other laws, regulations or treaties, changes in our status under U.S. or non-U.S. laws or adverse determinations by taxing or other governmental authorities could increase our tax burden or otherwise affect our financial condition or operating results, as well as subject our shareholders to additional taxes.

The taxes associated with our operations and corporate structure could be impacted by changes in tax or other laws, treaties or regulations or the interpretation or enforcement thereof by the U.S. or non-U.S. tax or other governmental authorities. Even after legislation is enacted, further guidance, regulations and technical corrections pertaining to the legislation continue to be issued by the tax authorities, some of which may have retroactive application. We continue to monitor and review new guidance and regulations as they are issued, as any changes could have a material adverse effect on our financial statements. In addition, governmental authorities are actively engaged in formulating new legislative proposals. Any future legislative changes to the tax laws and judicial or regulatory interpretation thereof, the geographic mix of earnings, changes in overall profitability, and other factors could also materially impact our effective tax rate.

We continue to monitor for other tax changes, U.S. (including state and local) and non-U.S. related, which can also adversely impact our overall tax burden. From time to time, proposals have been made and/or legislation has been introduced to change the tax laws, regulations or interpretations thereof of various jurisdictions or limit tax treaty benefits that if enacted or implemented could materially increase our tax burden and/or effective tax rate and could have a material adverse impact on our financial condition and results of operations. Moreover, the Organisation for Economic Co-operation and Development (OECD) has released proposals to create an agreed set of international rules for fighting base erosion and profit shifting, including Pillar One and Pillar Two, such that tax laws in countries in which we do business could change on a prospective or retroactive basis, and any such changes could adversely impact us. On 12 December 2022, the European Union (EU) Member States agreed in principle on the introduction of a global minimum tax rate (proposed 15% minimum tax rate). On 15 December 2022, the European Council formally adopted the Council Directive on ensuring a global minimum level of taxation for multinational and large-scale domestic groups in the EU Member States (the Directive), meaning that the Directive will have to be transposed into EU Member States' national law by the end of 2023, entering into effect beginning 1 January 2024. As a consequence, our global effective tax rate could be materially impacted by such legislation, or any resulting local country legislation enacted in response to any potential global minimum tax rates.

In addition to the above, the European Commission has been very active in investigating whether various tax regimes or private tax rulings provided by a country to particular taxpayers may constitute State Aid. We cannot predict the outcome of any of these potential changes or investigations in any of the jurisdictions, but if any of the above occurs and impacts us, this could materially increase our tax burden and/or effective tax rate and could have a material adverse impact on our financial condition and results of operations.

While we monitor proposals and other developments that would materially impact our tax burden and/or effective tax rate and investigate our options, we could still be subject to increased taxation on a going forward basis no matter what action we undertake if certain legislative proposals or regulatory changes are enacted, certain tax treaties are amended and/or our interpretation of applicable tax or other laws is challenged and determined to be incorrect. In particular, any changes and/or differing interpretations of applicable tax law that have the effect of disregarding the shareholders' decision to reorganize in Ireland, limiting our ability to take advantage of tax treaties between jurisdictions, modifying or eliminating the deductibility of various currently deductible payments, or increasing the tax burden of operating or being resident in a particular country could subject us to increased taxation.

In addition, tax authorities periodically review tax returns filed by us and can raise issues regarding our filing positions, timing and amount of income or deductions, and the allocation of income among the jurisdictions in which we operate. These examinations on their own, or any subsequent litigation related to the examinations, may result in additional taxes or penalties against us. If the ultimate result of these audits differs from our original or adjusted estimates, they could have a material impact on our tax provision.

Risks Related to our Reverse Morris Trust Transaction

On the Distribution Date, we completed the Transaction with Gardner Denver, which changed its name to Ingersoll Rand after the Transaction whereby we distributed common stock of Ingersoll-Rand U.S. Holdco, Inc., which contained Ingersoll Rand Industrial, through the Distribution to the Spin-off Shareholders. Ingersoll Rand Industrial then merged with a wholly-owned subsidiary of Ingersoll Rand. Upon close of the Transaction, the Spin-off Shareholders received approximately 50.1% of the shares of Ingersoll Rand common stock on a fully-diluted basis and Gardner Denver shareholders retained approximately 49.9% of the shares of Ingersoll Rand on a fully diluted basis. As a result, the Spin-off Shareholders received 0.8824 shares of Ingersoll Rand common stock with respect to each share of our stock owned as of 24 February 2020. In connection with the Transaction, we received a special cash payment of $1.9 billion.

If the Distribution as part of our Reverse Morris Trust Transaction is determined to be taxable for Irish tax purposes, significant Irish tax liabilities may arise for the Spin-off Shareholders.

We received an opinion from Irish Revenue regarding certain tax matters associated with the Distribution, as well as a legal opinion from our Irish counsel Arthur Cox LLP, regarding certain Irish tax consequences of the Distribution for the Spin-off Shareholders. For the Spin-off Shareholders who are not resident or ordinarily resident in Ireland for Irish tax purposes and who do not hold their shares in connection with a trade or business carried on by such Spin-off Shareholders through an Irish branch or agency, we consider, based on both opinions taken together, that no adverse Irish tax consequences for such Spin-off Shareholders should have arisen. These opinions relied on certain facts and assumptions and certain representations. Notwithstanding the opinion from Irish Revenue, Irish Revenue could ultimately determine on audit that the Distribution is taxable for Irish tax purposes, for example, if it determines that any of these facts, assumptions or representations are not correct or have been violated. A legal opinion represents the tax adviser's best legal judgment and is not binding on Irish Revenue or the courts and Irish Revenue or the courts may not agree with the legal opinion. In addition, the legal opinion is based on current law and cannot be relied upon if current law changes with retroactive effect. If the Distribution ultimately is determined to be taxable for Irish tax purposes, we and the Spin-off Shareholders could have significant Irish tax liabilities as a result of the Distribution, and there could be a material adverse impact on our business, financial condition, results of operations and cash flows in future reporting periods.

If the Distribution together with certain related transactions do not qualify as tax-free under Sections 355 and 368(a) of the Code, including as a result of subsequent acquisitions of stock of the Company or Ingersoll Rand, then the Company and the Spin-off Shareholders may be required to pay substantial U.S. federal income taxes, and Ingersoll Rand may be obligated to indemnify the Company for such taxes imposed on the Company.

At the time of Distribution, we received an opinion from our U.S. tax counsel Paul, Weiss, Rifkind, Wharton & Garrison LLP (Paul Weiss) substantially to the effect that, for U.S. federal income tax purposes, the Distribution together with certain related transactions undertaken in anticipation of the Distribution and taking into account the merger of Ingersoll Rand Industrial with the wholly-owned subsidiary of Ingersoll Rand will qualify as a tax-free transaction under Sections 368(a), 361 and 355 of the Code, with the result that we and the Spin-off Shareholders will not recognize any gain or loss for U.S. federal income tax purposes as a result of the spin-off. The opinion of our counsel was based on, among other things, certain representations and assumptions as to factual matters made by Ingersoll Rand, Ingersoll Rand Industrial and the Company. The failure of any factual representation or assumption to be true, correct and complete in all material respects could adversely affect the validity of the opinion of counsel. An opinion of counsel represents counsel's best legal judgment, is not binding on the Internal Revenue Service (IRS) or the courts, and the IRS or the courts may not agree with the opinion. In addition, an opinion will be based on current law, and cannot be relied upon if current law changes with retroactive effect. If the Distribution, and/or related internal transactions in anticipation of the Distribution ultimately are determined to be taxable, we could incur significant U.S. federal income tax liabilities, which could cause a material adverse impact on our business, financial condition, results of operations and cash flows in future reporting periods, although if this determination resulted from certain actions taken by Ingersoll Rand Industrial or Ingersoll Rand, Ingersoll Rand would be required to bear the cost of any resultant tax liability pursuant to the terms of the Tax Matters Agreement dated 29 February 2020, among Ingersoll-Rand Plc, Ingersoll-Rand Lux International Holding Company S.à r.l, Ingersoll-Rand Services Company, Ingersoll-Rand U.S. HoldCo, Inc., and Gardner Denver Holdings, Inc. (Tax Matters Agreement). .

The Distribution will be taxable to the Company pursuant to Section 355(e) of the Code if there is a 50% or greater change in ownership of either the Company or Ingersoll Rand Industrial, directly or indirectly (including through such a change in ownership of Ingersoll Rand), as part of a plan or series of related transactions that include the Distribution. A Section 355(e) change of ownership would not make the Distribution taxable to the Spin-off Shareholders, but instead may result in corporate-level taxable gain to certain of our subsidiaries. Because the Spin-off Shareholders will collectively be treated as owning more than 50% of the Ingersoll Rand common stock following the merger, the merger alone should not cause the Distribution to be taxable to our subsidiaries under Section 355(e). However, Section 355(e) might apply if other acquisitions of stock of the Company before or after the merger, or of Ingersoll Rand before or after the merger, are considered to be part of a plan or series of related transactions that include the Distribution together with certain related transactions. If Section 355(e) applied, certain of our subsidiaries might recognize a very substantial amount of taxable gain, although if this applied as a result of certain actions taken by Ingersoll Rand Industrial, Ingersoll Rand or certain specified Ingersoll Rand shareholders, Ingersoll Rand would be required to bear the cost of any resultant tax liability under Section 355(e) pursuant to the terms of the Tax Matters Agreement.

If the merger does not qualify as a tax-free reorganization under Section 368(a) of the Code, the Spin-off Shareholders may be required to pay substantial U.S. federal income taxes.

On the Distribution Date, we have received an opinion from Paul Weiss, and Ingersoll Rand has received an opinion from their counsel Simpson Thacher & Bartlett LLP, substantially to the effect that the merger will qualify as a reorganization within the meaning of Section 368(a) of the Code with the result that U.S. holders of Ingersoll Rand Industrial common stock who received Ingersoll Rand common stock in the merger will not recognize any gain or loss for U.S. federal income tax purposes (except with respect to cash received in lieu of fractional shares of Ingersoll Rand common stock). These opinions were based upon, among other things, certain representations and assumptions as to factual matters made by Ingersoll Rand Inc., the Company, Ingersoll Rand Industrial and the merger subsidiary used by Ingersoll Rand. The failure of any factual representation or assumption to be true, correct and complete in all material respects could adversely affect the validity of the opinions. An opinion of counsel represents counsel's best legal judgment, is not binding on the IRS or the courts, and the IRS or the courts may not agree with the opinion. In addition, the opinions are based on current law, and cannot be relied upon if current law changes with retroactive effect. If the merger were taxable, U.S. holders of the common stock of Ingersoll Rand Industrial would be considered to have made a taxable sale of their Ingersoll Rand Industrial common stock to Ingersoll Rand, and such U.S. holders of Ingersoll Rand Industrial would generally recognize taxable gain or loss on their receipt of Ingersoll Rand common stock in the merger.

Risks Related to Our Irish Domicile

Irish law differs from the laws in effect in the United States and may afford less protection to holders of our securities.

The United States currently does not have a treaty with Ireland providing for the reciprocal recognition and enforcement of judgments in civil and commercial matters. As such, there is some uncertainty as to whether the courts of Ireland would recognize or enforce judgments of U.S. courts obtained against us or our directors or officers based on U.S. federal or state civil liability laws, including the civil liability provisions of the U.S. federal or state securities laws, or hear actions against us or those persons based on those laws.

As an Irish company, we are governed by the Irish Companies Act, which differs in some material respects from laws generally applicable to U.S. corporations and shareholders, including, among others, differences relating to interested director and officer transactions, indemnification of directors and shareholder lawsuits. Likewise, the duties of directors and officers of an Irish company generally are owed to the company only. Shareholders of Irish companies generally do not have a personal right of action against directors or officers of the company and may exercise such rights of action on behalf of the company only in limited circumstances. Accordingly, holders of our securities may have more difficulty protecting their interests than would holders of securities of a corporation incorporated in a jurisdiction of the United States. In addition, Irish law does not allow for any form of legal proceedings directly equivalent to the class action available in the United States.

Irish law allows shareholders to authorize share capital which then can be issued by a board of directors without shareholder approval. Also, subject to specified exceptions, Irish law grants statutory pre-emptive rights to existing shareholders to subscribe for new issuances of shares for cash but allows shareholders to authorize the waiver of the statutory pre-emptive rights with respect to any particular allotment of shares. Under Irish law, we must have authority from our shareholders to issue any shares, including shares that are part of the Company's authorized but unissued share capital. In addition, unless otherwise authorized by its shareholders, when an Irish company issues shares for cash to new shareholders, it is required first to offer those shares on the same or more favorable terms to existing shareholders on a pro-rata basis. If we are unable to obtain these authorizations from our shareholders or are otherwise limited by the terms of our authorizations, our ability to issue shares or otherwise raise capital could be adversely affected.

Dividends received by our shareholders may be subject to Irish dividend withholding tax.

In certain circumstances, we are required to deduct Irish dividend withholding tax (currently at the rate of 25%) from dividends paid to our shareholders. In the majority of cases, shareholders resident in the United States will not be subject to Irish withholding tax, and shareholders resident in a number of other countries will not be subject to Irish withholding tax provided that they complete certain Irish dividend withholding tax forms. However, some shareholders may be subject to withholding tax, which could have an adverse impact on the price of our shares.

Dividends received by our shareholders could be subject to Irish income tax.

Dividends paid in respect of our shares will generally not be subject to Irish income tax where the beneficial owner of these dividends is exempt from dividend withholding tax, unless the beneficial owner of the dividend has some connection with Ireland other than his or her shareholding in Trane Technologies plc.

Our shareholders who receive their dividends subject to Irish dividend withholding tax will generally have no further liability to Irish income tax on the dividends unless the beneficial owner of the dividend has some connection with Ireland other than his or her shareholding in Trane Technologies plc.

Political Donations

No political contributions that require disclosure under the Electoral Act, 1997 (as amended) were made during the financial year 2022.

Future Developments

The Group is very focused on continuing to deliver top quartile financial performance amongst its industrial peer group and to advance its bold sustainability commitments. We accomplish this through investment in customer-driven product and service innovation to drive market outgrowth and generate free cash flow. We also continue to focus on margin expansion through pricing and improved productivity. Successful execution of these focus areas will allow us to maintain and grow our position as a global climate innovator creating comfortable, sustainable and efficient environments.

Subsidiary Companies and Associates

A list of the principal subsidiary and associated undertakings is included in Note 38 to Consolidated Financial Statements.

Branches

The Parent Company does not operate any branches outside of the State**.**

Accounting records

The measures that the directors have taken to secure compliance with the requirements of Sections 281 to 285 of the Companies Act 2014 with regards to the keeping of accounting records are the employment of appropriately qualified accounting personnel and the maintenance of computerized accounting systems. These accounting records are kept at the registered office of the Company.

Dividends

The gross dividends paid in 2022 to ordinary shareholders and non-controlling interests were $635.2 million (2021: $576.7 million).

Acquisition and cancellation of shares

Shares repurchased and cancelled

During the year ended 31 December 2022, the Company repurchased 7,498,359 ordinary shares (2021: 5,933,982), or 2.89% of the ordinary shares in issue (2021: 2.25%) at an average price of $160.07 per share (2021: $185.42). These shares with a nominal value of $7,498,359 were cancelled, giving rise to a capital redemption reserve of an equivalent amount as required by Section 106 (4) (a) of the Companies Act 2014. The aggregate consideration paid was $1.2 billion (2021: $1.1 billion) which is reflected as a reduction in the profit and loss account within *Total equity*.

Treasury shares held by the Company

At 31 December 2022, the total number of treasury shares held directly by the Company was 24,495,509 (2021: 24,495,509); the nominal value of these shares was $24.5 million (2021: $24.5 million). During the year ended 31 December 2022 the Company did not acquire any treasury shares under the repurchase program. The total accumulated treasury shares acquired represent 9.7% (2021: 9.4%) of the ordinary shares in issue at 31 December 2022.

Own shares held by a subsidiary

At 31 December 2022, a subsidiary of the Company held 5,359 (2021: 5,426) ordinary shares of $1.00 each with an aggregate nominal value of $5,359 (2021: $5,426) in trust for a deferred compensation plan.

Going Concern

The Board has formed a judgment at the time of approving the financial statements that there is a reasonable expectation that the Group and the Company have adequate resources to continue in operational existence for the foreseeable future extending from the time of approving the financial statements. In arriving at this conclusion, the Board has taken account of current and anticipated trading performance, together with the current and anticipated levels of net debt and the availability of the committed borrowing facilities. For this reason, the going concern basis continues to be adopted in the preparation of the Consolidated Financial Statements and the Parent Company Financial Statements. During the year ended 31 December 2022, we experienced significant increases in end market demand, executed price increases to cover rapidly increasing material, component and logistics costs and realized strong earnings growth as a result of strong execution across our organization. In addition, to meet our increased customer demand, we are proactively managing industry-wide supply chain and resource constraints and are working closely with our suppliers, customers and logistics providers to mitigate the impacts on our business as we continue to sell, install and service our products. We continue to expect that existing available cash at bank and in hand, the cash generated by our operations, our committed borrowing facilities, as well as our expected ability to access the capital and debt markets will be sufficient to fund our operating and capital needs for at least the next twelve month period extending from the time of approving the financial statements and thereafter for the foreseeable future. To its knowledge, the Board reasonably believes that these uncertainties would not have a material impact on our ability to continue as a going concern as of the approval date. For this reason, the going concern basis continues to be adopted in the preparation of the Consolidated Financial Statements and the Parent Company Financial Statements. The Board of Directors has not identified material uncertainties relating to events or conditions that may cast significant doubt on the ability of the Group or the Company to continue as going concerns.

AGM

The Annual General Meeting of the Company will take place at Adare Manor Hotel, Adare, County Limerick, Ireland on Thursday, 1 June 2023 at 2.30p.m., local time. See "Information Concerning Voting and Solicitation" of the proxy statement for further information on participating in the Annual General Meeting. The notice of meeting and a description of the business to be transacted is available on the Company's website at www.tranetechnologies.com.

Directors and Secretaries

The directors and secretaries of the Company as of 31 December 2022 are listed in the table below and, except as noted, have served from the period of 1 January 2022 through 31 December 2022 and through the date of this report.

Directors
Kirk E. Arnold
Ann C. Berzin
April Miller Boise
John G. Bruton
Jared L. Cohon
Gary D. Forsee
Mark R. George (Appointed 11 October 2022)
Linda P. Hudson
Myles P. Lee
Melissa N. Schaeffer (Appointed 11 October 2022)
Karen B. Peetz (Resigned 7 April 2022)
David S. Regnery
John P. Surma
Tony White

Secretaries
Evan M. Turtz (Company Secretary)
Sara Walden Brown (Assistant Secretary) (Resigned 30 September 2022)
Computershare Inc. (Assistant Secretary)

Directors' and Secretaries' Interests in Shares

No director, the company secretary or any member of their immediate families had any interest in shares or debentures of any subsidiary. The beneficial interests, including the interests of spouses and minor children, of the directors and secretaries in office at 31 December 2022 and 2021 in the ordinary share capital of Trane Technologies plc are not disclosed in the Directors' Report as they are below the reportable 1% thresholds for such disclosures noted in Section 260 of the Companies Act 2014.

Non-Financial Statements

The European Union (Disclosure of Non-Financial and Diversity Information by certain large undertakings and groups) Regulations 2017 (S.I. 360/2017) (as amended) (the "2017 Regulations") require us to disclose certain non-financial information in our Directors' Report. For the purposes of the 2017 Regulations, the sections entitled *Description of Business Model*, *Environmental Matters*, *Employee Matters*, *Social Matters*, *Human Rights* and *Anti-Corruption and Anti-Bribery* set out under the section entitled Non-Financial Statements European Union Directive of the U.S. 2022 Annual Report are incorporated by reference into this Directors' Report.

Pages 24 to 35 of this Directors' Report provides the Principal Risks for the Group including risks that pertain to the areas of environmental matters, social and employee matters, respect for human rights, and anti-bribery and anti-corruption. In order to manage and mitigate risks in these areas, we conduct materiality and risk assessments, develop and maintain policies and provide training and certification for our employees and business partners. We have systematic processes in place to govern these relationships, ensuring our suppliers share our values and adhere to our standards of business ethics, health and safety, and environmental and social responsibility.

The Board of Directors has oversight responsibility of the processes established to report and monitor systems for material risks applicable to the Group. The Board of Directors focuses on the Group's general risk management strategy and the most significant risks facing the Group and ensures that appropriate risk mitigation strategies are implemented by management. We have appointed the Chief Financial Officer as our Chief Risk Officer and, in that role, the Chief Risk Officer periodically reports on risk management policies and practices to the relevant board committee or to the full Board so that decisions can be made as to any required changes in our risk management and mitigation strategies or in the Board's oversight of these. We also have an Enterprise Risk Management Committee that assists the Board of Directors, our Chief Financial Officer and other members of our executive leadership team in their oversight of strategic, operational and financial risks.

Directors' Compliance Statement

The Directors acknowledge that they are responsible for securing compliance by the Company with its relevant obligations as defined in the Companies Act 2014 (the 'Relevant Obligations').

The Directors further confirm that a Compliance Policy Statement has been drawn up and that appropriate arrangements and structures have been put in place which, in the Directors' opinion, are designed to secure material compliance with the Company's Relevant Obligations. For the year ended 31 December 2022, the Directors, with the assistance of the Legal and Finance Group, have conducted a review of the arrangements and structures in place. In discharging their responsibilities under Section 225 of the Companies Act 2014, the Directors relied on the advice of persons who the Directors believe have the requisite knowledge and experience to advise the Company on compliance with its Relevant Obligations.

Disclosure of Information to the Auditor

In accordance with the provisions of section 330 of the Companies Act 2014, each of the persons who are Directors at the date of approval of this report confirms that:

- So far as the Director is aware, there is no relevant audit information (as defined in the Companies Act 2014) of which the statutory auditor is unaware; and
- The Director has taken all the steps that he/she ought to have taken as a Director in order to make himself/herself aware of any relevant audit information (as defined) and to ensure that the statutory auditor is aware of such information.

Audit Committee

In accordance with Section 167 of the Companies Act 2014, the Company has an established audit committee, which meets the requirements of the Companies Act.

Statutory Auditors

The statutory auditors, PricewaterhouseCoopers, have indicated their willingness to continue in office, and a resolution that they be re-appointed will be proposed at the Annual General meeting.

Approved by the Board of Directors on 5 April 2023 and signed on its behalf by:

/s/ Myles P. Lee	/s/ John P. Surma
Myles P. Lee	John P. Surma
Director	Director

STATEMENT OF DIRECTORS' RESPONSIBILITIES

The directors are responsible for preparing the directors' report and the financial statements in accordance with Irish law.

Irish law requires the directors to prepare financial statements for each financial year giving a true and fair view of the group's and company's assets, liabilities and financial position as at the end of the financial year and of the profit or loss of the group for the financial year. Under that law, the Directors have prepared the consolidated financial statements in accordance with U.S. accounting standards, as defined in Section 279(1) of the Companies Act 2014, to the extent that the use of those principles in the preparation of the financial statements does not contravene any provision of the Companies Act or of any regulations made thereunder and the Parent Company financial statements in accordance with Generally Accepted Accounting Practice in Ireland (accounting standards issued by the Financial Reporting Council and Irish law) including Financial Reporting Standard 102 "The Financial Reporting Standard applicable in the United Kingdom and the Republic of Ireland" ("FRS 102").

Under Irish law, the directors shall not approve the financial statements unless they are satisfied that they give a true and fair view of the Group's and Company's assets, liabilities and financial position as at the end of the financial year and the profit or loss of the Group for the financial year.

In preparing these financial statements, the directors are required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state that the consolidated financial statements of Trane Technologies plc and its subsidiaries (the Group) comply with U.S. GAAP to the extent that it does not contravene Irish Company Law and that the stand alone entity balance sheet of Trane Technologies plc (the Company) complies with accounting standards issued by the Financial Reporting Council and Irish law subject to any material departures from those standards being disclosed and explained in the financial statements; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the company will continue in business.

The directors are responsible for keeping adequate accounting records that are sufficient to:

- correctly record and explain the transactions of the company;
- enable, at any time, the assets, liabilities, financial position and profit or loss of the company to be determined with reasonable accuracy; and
- enable the directors to ensure that the financial statements comply with the Companies Act 2014 and enable those financial statements to be audited.

The directors are also responsible for safeguarding the assets of the company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The directors are responsible for the maintenance and integrity of the corporate and financial information included on the company's website (www.tranetechnologies.com). Legislation in Ireland governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Independent auditors' report to the members of Trane Technologies plc

Report on the audit of the financial statements

Opinion

In our opinion:

- Trane Technologies plc's consolidated financial statements and Parent Company financial statements (the "financial statements") give a true and fair view of the Group's and the Parent Company's assets, liabilities and financial position as at 31 December 2022 and of the Group's profit and cash flows for the year then ended;
- the consolidated financial statements have been properly prepared in accordance with accounting principles generally accepted in the United States of America ("US GAAP"), as defined in Section 279 of the Companies Act 2014, to the extent that the use of those principles in the preparation of Group financial statements does not contravene any provision of Part 6 of the Companies Act 2014;
- the Parent Company financial statements have been properly prepared in accordance with Generally Accepted Accounting Practice in Ireland (accounting standards issued by the Financial Reporting Council of the UK, including Financial Reporting Standard 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" and Irish law); and
- the financial statements have been properly prepared in accordance with the requirements of the Companies Act 2014.

We have audited the financial statements, included within the Directors' Report and Financial Statements (the "Annual Report"), which comprise:

- the Consolidated Balance Sheet as at 31 December 2022;
- the Parent Company Balance Sheet as at 31 December 2022;
- the Consolidated Profit and Loss Account for the year then ended;
- the Consolidated Statement of Other Comprehensive Income for the year then ended;
- the Parent Company Statement of Comprehensive Income for the year then ended;
- the Consolidated Statement of Cash Flows for the year then ended;
- the Consolidated Statement of Changes in Equity for the year then ended;
- the Parent Company Statement of Changes in Equity for the year then ended;
- the notes to the financial statements, which include a description of the significant accounting policies.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (Ireland) ("ISAs (Ireland)") and applicable law. Our responsibilities under ISAs (Ireland) are further described in the Auditors' responsibilities for the audit of the financial statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We remained independent of the Group in accordance with the ethical requirements that are relevant to our audit of the financial statements in Ireland, which includes IAASA's Ethical Standard as applicable to listed entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

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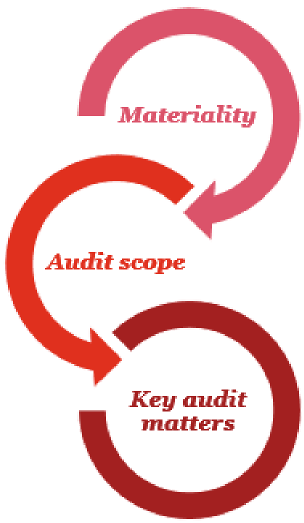
Our audit approach

Overview



Materiality

- $108.5 million (2021: $90 million) - Consolidated financial statements
- Based on c. 5% of profit on ordinary activities before tax.
- $186 million (2021: $234 million) - Parent Company financial statements.
- Based on c. 0.5% of net assets.
- For group audit purposes, the lower consolidated financial statements materiality of $90 million was applied to all balances that do not eliminate in the consolidated financial statements.

Performance materiality

- $81 million (2021: $67 million) - Consolidated financial statements.
- $140 million (2021: $173 million) - Parent company financial statements

Audit scope

- We conducted a full scope audit at one component at which the Group has significant operations.
- Specified audit procedures were performed at three additional components.
- Additionally, certain centralised Group functions and balances, including treasury, taxation, equity and stock compensation, goodwill and intangible assets, pension and post-retirement benefits, and claims and litigations were subject to full scope audit procedures.
- Overall, through one full scope audit and three specified procedures examinations, we obtained audit coverage in excess of 74% of the individual line items within the Consolidated Profit and Loss Account and Consolidated Balance Sheet.

Key audit matters

- Turnover Recognition from Contracts with Customers.

The scope of our audit

As part of designing our audit, we determined materiality and assessed the risks of material misstatement in the financial statements. In particular, we looked at where the directors made subjective judgements, for example in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain. As in all of our audits we also addressed the risk of management override of internal controls, including evaluating whether there was evidence of bias by the directors that represented a risk of material misstatement due to fraud.

Key audit matters

Key audit matters are those matters that, in the auditors' professional judgement, were of most significance in the audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by the auditors, including those which had the greatest effect on: the overall audit strategy; the allocation of resources in the audit; and directing the efforts of the engagement team. These matters, and any comments we make on the results of our procedures thereon, were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. This is not a complete list of all risks identified by our audit.

Key audit matter	*How our audit addressed the key audit matter*
Turnover Recognition from Contracts with Customers As described in Note 2(s) - Summary of significant accounting policies and statement of compliance and Note 5 - Turnover to the consolidated financial statements, the Company recognised $16.0 billion of consolidated turnover for the year ended December 31, 2022. Turnover is recognised when control of a good or service promised in a contract is transferred to a customer (i.e., where the Company has met its performance obligations under the contract). A majority of the Company's turnover is recognised at a point-in-time as control is transferred at a distinct point in time per the terms of a contract. However, a portion of the Company's turnover is recognised over-time as the customer simultaneously receives control as the Company performs work under a contract. We determined turnover recognition from contracts with customers to be a key audit matter as the Company's revenue recognition of point-in time and over-time contracts with customers had the greatest effect on the allocation of resources and direction of our audit effort.	We assessed the design and tested the effectiveness of controls relating to the turnover recognition process. We tested the information technology systems involved in the turnover recognition process. We tested revenue transactions on a sample basis by obtaining and inspecting evidence of an arrangement with a customer, evidence of goods delivered or services provided and evidence of consideration received in exchange for transferring those goods or services. We evaluated the completeness and accuracy of data provided by management. We assessed the appropriateness of the related disclosures within the financial statements.

How we tailored the audit scope

We tailored the scope of our audit to ensure that we performed enough work to be able to give an opinion on the financial statements as a whole, taking into account the structure of the Group, the accounting processes and controls, and the industry in which the Group operates.

The Group has three reportable segments, namely Americas, EMEA and Asia Pacific. Each reportable segment comprises a number of business units, primarily across Heating, Ventilation and Air conditioning (HVAC) and Transport refrigeration. The reportable segments and business units provide products and solutions through the Group's strategic brands, Trane and Thermo King, resulting in a number of management reporting units, identified by us as components. The Consolidated financial statements are a consolidation of the components.

In determining our audit scope, we considered the nature and extent of audit work that needed to be performed by us, as the Irish Group engagement team, the PwC US global engagement team, or other component auditors within other PwC network firms.

Overall, through one full scope audit and three specified procedures examinations, we obtained audit coverage in excess of 74% of the individual line items within the Consolidated Profit and Loss Account and Consolidated Balance Sheet. Materiality levels and instructions were issued to each component auditor. In addition to the audit report from each of the component auditors, we reviewed detailed memoranda on work performed and relevant findings which supplemented our understanding of the component, its results and the audit findings. For the full scope component we performed a review of selected workpapers and participated in video calls and in person meetings with the PwC US global engagement team. This, together with additional procedures performed by the PwC US global engagement team at Group level, gave us the evidence we needed for our opinion on the financial statements as a whole.

Materiality

The scope of our audit was influenced by our application of materiality. We set certain quantitative thresholds for materiality. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures on the individual financial statement line items and disclosures and in evaluating the effect of misstatements, both individually and in aggregate on the financial statements as a whole.

Based on our professional judgement, we determined materiality for the financial statements as a whole as follows:

	Consolidated financial statements	Parent company financial statements
Overall materiality	$108.5 million (2021: $90 million).	$186 million (2021: $234 million).
How we determined it	5% of profit on ordinary activities before tax.	0.5% of net assets.
Rationale for benchmark applied	The Group is profit oriented and profit on ordinary activities before tax is one of the key metrics used to assess its performance.	The Parent Company is a holding company. Consequently, we consider that net assets is the most relevant measure to reflect the nature of its activities and transactions. We used the lower overall consolidated financial statements materiality on balances and transactions that do not eliminate on consolidation.

We use performance materiality to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds overall materiality. Specifically, we use performance materiality in determining the scope of our audit and the nature and extent of our testing of account balances, classes of transactions and disclosures, for example in determining sample sizes. Our performance materiality was 75% of overall materiality, amounting to $81 million (Group audit) and $140 million (Parent Company audit).

In determining the performance materiality, we considered a number of factors - the history of misstatements, risk assessment and aggregation risk and the effectiveness of controls - and concluded that an amount at the upper end of our normal range was appropriate.

We agreed with the Audit Committee that we would report to them misstatements identified during our audit above $5 million (Group and Parent Company audits) (2021: $5 million) and $5 million (parent company audit) (2021: $5 million) as well as misstatements below that amount that, in our view, warranted reporting for qualitative reasons.

Conclusions relating to going concern

Our evaluation of the directors' assessment of the Group and Parent Company's ability to continue to adopt the going concern basis of accounting included:

- obtaining management's going concern assessment for a period of twelve months from the date on which the financial statements are authorised for issue;
- agreeing the cash flow projections underlying management's going concern assessment to board approved forecasts, assessing how these forecasts are compiled, and evaluating their key assumptions;
- considering the Group's and the Parent Company's liquidity and available financial resources including the cash at bank and in hand disclosed in Note 21 and debt and credit facilities disclosed in Note 25;
- evaluating the going concern disclosures included in the Note 2(b) in order to assess whether the disclosures were appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the Group's or the Parent Company's ability to continue as a going concern for a period of at least twelve months from the date on which the financial statements are authorised for issue.

In auditing the financial statements, we have concluded that the directors' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

However, because not all future events or conditions can be predicted, this conclusion is not a guarantee as to the Group's or the Parent Company's ability to continue as a going concern.

Our responsibilities and the responsibilities of the directors with respect to going concern are described in the relevant sections of this report.

Reporting on other information

The other information comprises all of the information in the Directors' Report and Financial Statements other than the financial statements and our auditors' report thereon. The directors are responsible for the other information. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except to the extent otherwise explicitly stated in this report, any form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report based on these responsibilities.

With respect to the Directors' Report, we also considered whether the disclosures required by the Companies Act 2014 (excluding the information included in the "Non Financial Statement" as defined by that Act on which we are not required to report) have been included.

Based on the responsibilities described above and our work undertaken in the course of the audit, ISAs (Ireland) and the Companies Act 2014 require us to also report certain opinions and matters as described below:

- In our opinion, based on the work undertaken in the course of the audit, the information given in the Directors' Report (excluding the information included in the "Non Financial Statement" on which we are not required to report) for the year ended 31 December 2022 is consistent with the financial statements and has been prepared in accordance with the applicable legal requirements.
- Based on our knowledge and understanding of the Group and Parent Company and their environment obtained in the course of the audit, we have not identified any material misstatements in the Directors' Report (excluding the information included in the "Non Financial Statement" on which we are not required to report).

Responsibilities for the financial statements and the audit

Responsibilities of the directors for the financial statements

As explained more fully in the Statement of Directors' Responsibilities set out on page 39, the directors are responsible for the preparation of the financial statements in accordance with the applicable framework and for being satisfied that they give a true and fair view.

The directors are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the Group's and the Parent Company's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Group or the Parent Company or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (Ireland) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud, is detailed below.

Based on our understanding of the Group and industry, we identified that the principal risks of non-compliance with laws and regulations related to the U.S Foreign Corrupt Practices Act, anti-bribery legislation and breaches of environmental and health & safety legislation, and we considered the extent to which non-compliance might have a material effect on the financial statements. We also considered those laws and regulations that have a direct impact on the preparation of the financial statements such as the Companies Act 2014 and relevant tax legislation. We evaluated management's incentives and opportunities for fraudulent manipulation of the financial statements (including the risk of override of controls), and determined that the principal risks were related to posting inappropriate journal entries to manipulate financial results, specifically manual journals to revenue, and potential management bias in accounting estimates. Audit procedures performed by the engagement team included:

- Discussions with the Audit Committee, senior management, internal legal counsel and internal audit including consideration of any known or suspected instance of fraud or non-compliance with laws and regulations;
- Reading the minutes of meetings of the Board and the Audit Committee;
- Considered the results of reporting from component teams relating to compliance with applicable laws and regulations and procedures performed to address assessed fraud risk;
- Challenging assumptions made by management in its significant accounting estimates;
- Identifying and testing selected journal entries based on our risk assessment, including manual revenue entries posted by participants of bonus programs, unusual account combinations and consolidation journals; and
- Designing and incorporating elements of unpredictability around the nature, timing or extent of audit procedures performed.

There are inherent limitations in the audit procedures described above. We are less likely to become aware of instances of non-compliance with laws and regulations that are not closely related to events and transactions reflected in the financial statements. Also, the risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery or intentional misrepresentations, or through collusion.

Our audit testing might include testing complete populations of certain transactions and balances, possibly using data auditing techniques. However, it typically involves selecting a limited number of items for testing, rather than testing complete populations. We will often seek to target particular items for testing based on their size or risk characteristics. In other cases, we will use audit sampling to enable us to draw a conclusion about the population from which the sample is selected.

A further description of our responsibilities for the audit of the financial statements is located on the IAASA website at:

https://www.iaasa.ie/getmedia/b2389013-1cf6-458b-9b8f-a98202dc9c3a/
Description_of_auditors_responsibilities_for_audit.pdf

This description forms part of our auditors' report.

Use of this report

This report, including the opinions, has been prepared for and only for the company's members as a body in accordance with section 391 of the Companies Act 2014 and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

Other required reporting

Companies Act 2014 opinions on other matters

- We have obtained all the information and explanations which we consider necessary for the purposes of our audit.
- In our opinion the accounting records of the Parent Company were sufficient to permit the Parent Company financial statements to be readily and properly audited.
- The Parent Company Balance Sheet is in agreement with the accounting records.

Other exception reporting

Directors' remuneration and transactions

Under the Companies Act 2014 we are required to report to you if, in our opinion, the disclosures of directors' remuneration and transactions specified by sections 305 to 312 of that Act have not been made. We have no exceptions to report arising from this responsibility.

Prior financial year Non-Financial Statement

We are required to report if the company has not provided the information required by Regulation 5(2) to 5(7) of the European Union (Disclosure of Non-Financial and Diversity Information by certain large undertakings and groups) Regulations 2017 in respect of the prior financial year. We have nothing to report arising from this responsibility.

/s/ Alisa Hayden

Alisa Hayden
for and on behalf of PricewaterhouseCoopers
Chartered Accountants and Statutory Audit Firm
Dublin

5 April 2023

Trane Technologies plc
Consolidated Profit and Loss Account
For the financial year ended 31 December 2022

	Note	2022 $m	2021 $m
Turnover	3/5	15,991.7	14,136.4
Cost of sales		(11,026.9)	(9,666.8)
Gross profit		4,964.8	4,469.6
Distribution costs		(1,309.6)	(1,203.4)
Administrative expenses		(1,236.3)	(1,242.9)
Other operating expense	4	(32.5)	(2.9)
Operating profit	8	2,386.4	2,020.4
Interest receivable and similar income	6	9.2	4.0
Interest payable and similar charges	7	(223.5)	(233.7)
Profit on ordinary activities before taxation		2,172.1	1,790.7
Tax on profit on ordinary activities	11	(375.9)	(333.5)
Profit on ordinary activities after taxation		1,796.2	1,457.2
Discontinued operations, net of taxation	12	(21.5)	(20.6)
Profit for the financial year		1,774.7	1,436.6
Profit attributable to:			
Equity holders of Trane Technologies plc		1,756.5	1,423.4
Non-controlling interests	34	18.2	13.2
Profit for the financial year		1,774.7	1,436.6
Earnings (loss) per share attributable to Trane Technologies plc ordinary shareholders:			
Basic:	13		
Continuing operations		$ 7.65	$ 6.05
Discontinued operations		(0.10)	(0.09)
Profit for the financial year		$ 7.55	$ 5.96
Diluted:	13		
Continuing operations		$ 7.57	$ 5.96
Discontinued operations		(0.09)	(0.09)
Profit for the financial year		$ 7.48	$ 5.87

The accompanying notes are an integral part of the consolidated financial statements.

Trane Technologies plc
Consolidated Statement of Other Comprehensive Income
For the financial year ended 31 December 2022

	Note	2022 $m	2021 $m
Profit for the financial year		1,774.7	1,436.6
Other comprehensive income (loss):			
Currency translation		(202.7)	(122.7)
Cash flow hedges			
Unrealized net gains (losses) arising during period		(24.3)	1.6
Net (gains) losses reclassified into earnings		10.2	(6.4)
Tax (expense) benefit		2.5	1.1
Total cash flow hedges, net of tax	33	(11.6)	(3.7)
Pension and Post-retirement benefits other than pensions (OPEB) adjustments:			
Prior service costs for the period		(3.3)	0.3
Net actuarial gains (losses) for the period		54.2	111.4
Amortization reclassified into earnings		21.6	38.6
Net curtailment and settlement (gains) losses reclassified to earnings		15.0	8.0
Currency translation and other		12.7	5.2
Tax (expense) benefit		(16.1)	(43.7)
Total pension and OPEB adjustments, net of tax	33	84.1	119.8
Other comprehensive income (loss), net of tax		(130.2)	(6.6)
Comprehensive income, net of tax		1,644.5	1,430.0
Less: Comprehensive income attributable to noncontrolling interests	34	(16.6)	(12.7)
Comprehensive income attributable to Trane Technologies plc		1,627.9	1,417.3

The accompanying notes are an integral part of the consolidated financial statements.

Trane Technologies plc
Consolidated Balance Sheet
As at 31 December 2022

	Note	2022	2021
		$m	$m
Fixed assets			
Intangible assets	14	8,767.7	8,810.4
Tangible assets	15	1,536.1	1,398.8
Right-to-use assets	16	462.5	436.8
Financial assets	17	296.3	281.3
		11,062.6	10,927.3
Current Assets			
Stock	18	1,993.8	1,530.8
Debtors: amounts falling due within one year	19	3,164.9	2,765.8
Cash at bank and in hand	20	1,220.5	2,159.2
Assets held for sale		—	15.1
		6,379.2	6,470.9
Debtors: amounts falling due after more than one year	21	639.8	661.6
Creditors: amounts falling due within one year	22	(5,287.3)	(4,050.2)
Net current assets		1,091.9	2,420.7
Total assets less current liabilities		12,794.3	14,009.6
Creditors: amounts falling due after more than one year	23	(4,420.5)	(5,149.2)
Net assets excluding provisions for liabilities		8,373.8	8,860.4
Provisions for liabilities	28	(2,268.6)	(2,587.3)
Net assets including provisions for liabilities		6,105.2	6,273.1
Capital and reserves			
Called-up share capital presented as equity	31	253.3	259.7
Share premium account		1,716.3	1,565.9
Capital redemption reserve		126.4	118.9
Other reserves	33	(1,006.4)	(772.8)
Profit and loss account		4,999.0	5,084.2
Total Trane Technologies plc equity		6,088.6	6,255.9
Non-controlling interests	34	16.6	17.2
Total equity		6,105.2	6,273.1

The accompanying notes are an integral part of the consolidated financial statements.

The consolidated financial statements were approved by the Board of Directors on 5 April 2023 and signed on its behalf by:

/s/ Myles P. Lee
Myles P. Lee
Director

/s/ John P. Surma
John P. Surma
Director

Trane Technologies plc
Consolidated Statement of Changes in Equity

		Called-up share capital - presented as equity								
		Amount	Shares	Share premium account	Capital redemption reserve	Other reserves	Profit and loss account	Total Trane Technologies plc Equity	Non-controlling interests	Total Equity
	Note	$m	Number	$m	$m	$m	$m	$m	$m	$m
Balance at 1 January 2021		263.3	263.3	1,183.0	113.0	(526.3)	5,374.7	6,407.7	19.4	6,427.1
Profit for the financial year		—	—	—	—	—	1,423.4	1,423.4	13.2	1,436.6
Other comprehensive income (loss)	34	—	—	—	—	(6.1)	—	(6.1)	(0.5)	(6.6)
Shares issued under incentive stock plans	32	2.3	2.3	382.9	—	(306.9)	—	78.3	—	78.3
Repurchase of ordinary shares	32	(5.9)	(5.9)	—	5.9	—	(1,100.3)	(1,100.3)	—	(1,100.3)
Share-based compensation	34	—	—	—	—	66.4	(2.8)	63.6	—	63.6
Dividends declared to non-controlling interests	35	—	—	—	—	—	—	—	(14.9)	(14.9)
Cash dividends declared and paid ($2.36 per share)	34	—	—	—	—	—	(561.8)	(561.8)	—	(561.8)
Separation of Ingersoll Rand Industrial	12	—	—	—	—	—	(49)	(49)	—	(49.0)
Other	34	—	—	—	—	0.1	—	0.1	—	0.1
Balance at 31 December 2021		259.7	259.7	1,565.9	118.9	(772.8)	5,084.2	6,255.9	17.2	6,273.1
Profit for the financial year		—	—	—	—	—	1,756.5	1,756.5	18.2	1,774.7
Other comprehensive income (loss)	34	—	—	—	—	(128.6)	—	(128.6)	(1.6)	(130.2)
Shares issued under incentive stock plans	32	1.1	1.1	162.8	—	(161.3)	—	2.6	—	2.6
Repurchase of ordinary shares	32	(7.5)	(7.5)	—	7.5	—	(1,200.2)	(1,200.2)	—	(1,200.2)
Share-based compensation	34	—	—	—	—	56.2	(1.9)	54.3	—	54.3
Dividends declared to non-controlling interests	35	—	—	—	—	—	—	—	(14.5)	(14.5)
Acquisition of noncontrolling interest	35	—	—	(12.4)	—	—	—	(12.4)	(2.7)	(15.1)
Cash dividends declared and paid ($2.68 per share)	34	—	—	—	—	—	(620.7)	(620.7)	—	(620.7)
Separation of Ingersoll Rand Industrial	12	—	—	—	—	—	(18.9)	(18.9)	—	(18.9)
Other		—	—	—	—	0.1	—	0.1	—	0.1
Balance at 31 December 2022		253.3	253.3	1,716.3	126.4	(1,006.4)	4,999	6,088.6	16.6	6,105.2

The accompanying notes are an integral part of the consolidated financial statements.

Trane Technologies plc
Consolidated Statements of Cash Flows
For the financial year ended 31 December 2022

	2022 $m	2021 $m
Cash flows from operating activities:		
Profit for the financial year	1,774.7	1,436.6
Discontinued operations, net of taxation	21.5	20.6
Adjustments for non-cash transactions:		
Depreciation and amortization	323.6	299.4
Pension and other postretirement benefits	55.6	50.8
Stock settled share-based compensation	56.3	66.5
Other non-cash items, net	17.1	(36.4)
Changes in other assets and liabilities, net of the effects of acquisitions:		
Debtors	(345.4)	(265.4)
Stock	(466.7)	(348.8)
Other current and noncurrent assets	(116.8)	(153.8)
Trade creditors	317.9	275.3
Other current and noncurrent liabilities	60.9	249.6
Net cash provided by (used in) continuing operating activities	1,698.7	1,594.4
Net cash provided by (used in) discontinued operating activities	(194.7)	(6.1)
Net cash provided by (used in) operating activities	1,504.0	1,588.3
Cash flows from investing activities:		
Capital expenditures	(291.8)	(223.0)
Acquisitions and equity method investments, net of cash acquired	(234.7)	(269.2)
Proceeds from sale of tangible fixed assets	9.7	15.1
Other investing activities, net	(23.0)	(68.6)
Net cash provided by (used in) continuing investing activities	(539.8)	(545.7)
Net cash provided by (used in) discontinued investing activities	(0.6)	—
Net cash provided by (used in) investing activities	(540.4)	(545.7)
Cash flows from financing activities:		
Payments of long-term debt	(9.6)	(432.5)
Debt issuance costs	(2.1)	(2.7)
Dividends paid to ordinary shareholders	(620.2)	(561.1)
Dividends paid to noncontrolling interests	(14.5)	(14.9)
Proceeds (payments) from shares issued under incentive plans, net	2.6	78.3
Repurchase of ordinary shares	(1,200.2)	(1,100.3)
Receipt of / (Settlement related to) special cash payment	(6.2)	(49.5)
Other financing activities, net	(2.0)	(44.9)
Net cash provided by (used in) financing activities	(1,852.2)	(2,127.6)
Effect of exchange rate changes on cash at bank and in hand	(50.1)	(45.7)
Net increase (decrease) in cash at bank and in hand	(938.7)	(1,130.7)
Cash at bank and in hand - beginning of period	2,159.2	3,289.9
Cash at bank and in hand - end of period	1,220.5	2,159.2
Cash paid during the year for:		
Interest	218.0	234.9
Taxation, net of refunds	321.3	356.9

The accompanying notes are an integral part of the consolidated financial statements.

1. GENERAL INFORMATION

Trane Technologies, public limited company (Plc, Parent Company or Company), incorporated in Ireland in 2009, and its consolidated subsidiaries (collectively we, our, the Group) is a global climate innovator. The Group brings sustainable and efficient solutions to buildings, homes and transportation through the Group's strategic brands, Trane® and Thermo King®, and its environmentally responsible portfolio of products, services and connected intelligent controls. The Group generates turnover and cash primarily through the design, manufacture, sales and service of solutions for Heating, Ventilation and Air Conditioning (HVAC), transport refrigeration and custom refrigeration solutions. As an industry leader with an extensive global install base, the Group's growth strategy includes expanding recurring turnover through services and rental options. The Group’s unique business operating system, uplifting culture and highly engaged team around the world are also central to its earnings and cash flow growth.

Completion of Reverse Morris Trust Transaction

On 29 February 2020 (Distribution Date), the Group completed its Reverse Morris Trust transaction (the Transaction) with Gardner Denver Holdings, Inc. (Gardner Denver) whereby the Group separated its former Industrial segment (Ingersoll Rand Industrial) through a pro rata distribution to shareholders of record as of 24 February 2020 (Spin-off Shareholders). Ingersoll Rand Industrial then merged into a wholly-owned subsidiary of Gardner Denver, which changed its name to Ingersoll Rand Inc. (Ingersoll Rand). Upon close of the Transaction, the Spin-off Shareholders received 50.1% of the shares of Ingersoll Rand common stock on a fully-diluted basis and Gardner Denver shareholders retained 49.9% of the shares of Ingersoll Rand on a fully diluted basis. As a result, the Spin-off Shareholders received .8824 shares of Ingersoll Rand common stock with respect to each share owned as of 24 February 2020. In connection with the Transaction, the Group received a special cash payment of $1.9 billion.

During the year ended 31 December 2022, the Group recorded a reduction to *Profit and loss account reserve of* $18.9 million primarily related to tax matters associated with Ingersoll Rand Industrial and the settlement of certain items related to the Transaction. During the year ended 31 December 2021, the Group paid Ingersoll Rand $49.5 million to settle certain items related to the Transaction. This payment was related to working capital, cash and indebtedness amounts as of the Distribution Date, as well as funding levels related to pension plans, non-qualified deferred compensation plans and retiree health benefits. The Group recorded the settlement as a reduction to *Profit and loss account* during the first quarter of 2021.

Discontinued Operations

After the Distribution Date, the Company does not beneficially own any Ingersoll Rand Industrial shares of common stock and no longer consolidates Ingersoll Rand Industrial in its financial statements. The historical results of Ingersoll Rand Industrial are presented as a discontinued operation in the Consolidated Profit and Loss Account and Consolidated Statements of Cash Flows.

Reorganization of Aldrich and Murray

On 1 May 2020, certain subsidiaries of the Group underwent an internal corporate restructuring that was effectuated through a series of transactions (2020 Corporate Restructuring). As a result, Aldrich Pump LLC (Aldrich) and Murray Boiler LLC (Murray), indirect wholly-owned subsidiaries of Trane Technologies plc, became solely responsible for the asbestos-related liabilities, and the beneficiaries of the asbestos-related insurance assets, of Trane Technologies Company LLC and Trane U.S. Inc, respectively. On a consolidated basis, the 2020 Corporate Restructuring did not have an impact on the Consolidated Financial Statements. In connection with the 2020 Corporate Restructuring, certain subsidiaries of the Group entered into funding agreements with Aldrich and Murray (collectively the Funding Agreements), pursuant to which those subsidiaries are obligated, among other things, to pay the costs and expenses of Aldrich and Murray during the pendency of the Chapter 11 cases to the extent distributions from their respective subsidiaries are insufficient to do so and to provide an amount for the funding for a trust established pursuant to section 524(g) of the Bankruptcy Code, to the extent that the other assets of Aldrich and Murray are insufficient to provide the requisite trust funding.

On 18 June 2020 (Petition Date), Aldrich and Murray filed voluntary petitions for relief under Chapter 11 of Title 11 of the United States Code (the Bankruptcy Code) in the United States Bankruptcy Court for the Western District of North Carolina (the Bankruptcy Court) to resolve equitably and permanently all current and future asbestos related claims in a manner beneficial to claimants, Aldrich and Murray. As a result of the Chapter 11 filings, all asbestos-related lawsuits against Aldrich and Murray have been stayed due to the imposition of a statutory automatic stay applicable in Chapter 11 bankruptcy cases. Only Aldrich and Murray have filed for Chapter 11 relief. Neither Aldrich's wholly-owned subsidiary, 200 Park, Inc. (200 Park), Murray's wholly-owned subsidiary, ClimateLabs LLC (ClimateLabs), Trane Technologies plc nor its other subsidiaries (the Trane Companies) are part of the Chapter 11 filings. The Trane Companies are expected to continue to operate as usual, with no disruption to their employees, suppliers, or customers globally. However, as of the Petition Date, Aldrich and its wholly-owned subsidiary 200 Park and Murray and its wholly-owned subsidiary ClimateLabs were deconsolidated and their respective assets and liabilities were derecognized from the Group's Consolidated Financial Statements. Refer to Note 29, "Commitments and Contingencies," for more information regarding the Chapter 11 bankruptcy and asbestos-related matters.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND STATEMENT OF COMPLIANCE

A summary of significant accounting policies used in the preparation of the accompanying Consolidated Financial Statements follows:

(a) Basis of preparation: Irish law requires the directors to prepare financial statements for each financial year giving a true and fair view of the Group's and Company's assets, liabilities and financial position as at the end of the financial year and of the profit or loss of the group for the financial year. Under that law, the Directors have prepared the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP), as defined in Section 279(1) of the Companies Act 2014, to the extent that the use of those principles in the preparation of the financial statements does not contravene any provision of the Companies Act or of any regulations made thereunder and the Parent Company financial statements in compliance with Generally Accepted Accounting Practice in Ireland (accounting standards issued by the Financial Reporting Council and the Companies Act 2014) including Financial Reporting Standard 102, 'The Financial Reporting Standard applicable in the United Kingdom and Republic of Ireland' (FRS 102).

The Consolidated Financial Statements are prepared in accordance with Irish Company Law, to present to the shareholders of Trane Technologies plc and file with the Companies Registration Office in Ireland. Accordingly, these Consolidated Financial Statements include disclosures required by the Companies Act 2014 of Ireland in addition to those required under U.S. GAAP. Unless otherwise indicated, these financial statements use the North American English spelling.

(b) Going concern: The Consolidated Financial Statements basis have been prepared on a going concern basis. The Board has formed a judgement at the time of approving the Consolidated Financial Statements that there is a reasonable expectation that the Group will have adequate resources to continue in operational existence for the foreseeable future from the date on which the Consolidated Financial Statements are approved for issue. The Board expects that the Group's expected ability to access cash resources, cash expected to be generated from operations, committed borrowing facilities and the Group's expected ability to access the capital and debt markets will be sufficient to fund the Group's operating and capital needs for at least the twelve month period of this going concern assessment. For this reason, the going concern basis continues to be adopted in the preparation of the Group and the Parent financial statements. For further details, refer to page 36 of the Directors' Report.

(c) Use of Estimates: The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosures of contingent assets and liabilities at the date of the financial statements as well as the reported amounts of turnover and expenses during the reporting period. Estimates are based on several factors including the facts and circumstances available at the time the estimates are made, historical experience, risk of loss, general economic conditions and trends, and the assessment of the probable future outcome. Actual results could differ from those estimates. Estimates and assumptions are reviewed periodically, and the effects of changes, if any, are reflected in the Consolidated Statements of Earnings in the period that they are determined.

(d) Currency Translation

(i) Functional and presentation currency
The group's functional and presentation currency is the U.S. dollar, denominated by the symbol "$" and unless otherwise stated, the financial statements have been presented in millions.

ii) Transactions and balances
Assets and liabilities of non-U.S. subsidiaries, where the functional currency is not the U.S. dollar, have been translated at year-end exchange rates, and income and expense accounts have been translated using average exchange rates throughout the year. Adjustments resulting from the process of translating an entity's financial statements into the U.S. dollar have been recorded in the equity section of the Consolidated Balance Sheets within *Other reserves*. Transactions that are denominated in a currency other than an entity's functional currency are subject to changes in exchange rates with the resulting gains and losses recorded within profit for the financial year.

(e) Basis of Consolidation: The Consolidated Financial Statements include all majority-owned subsidiaries of the Group. A noncontrolling interest in a subsidiary is considered an ownership interest in a majority-owned subsidiary that is not attributable to the parent. The Group includes Non-controlling interest as a component of Total equity in the Consolidated Balance Sheets and the profits attributable to non-controlling interests are presented as an adjustment from *Profit after taxation* used to arrive at the profit for the financial year attributable to Trane Technologies plc in the Consolidated Profit and Loss Account.

(f) Cash at Bank and In Hand: Cash at bank and in hand includes cash on hand, demand deposits and all highly liquid investments with original maturities at the time of purchase of three months or less. The Group maintains amounts on deposit at various financial institutions, which may at times exceed federally insured limits. However, management periodically evaluates the credit-worthiness of those institutions and has not experienced any losses on such deposits.

(g) Allowance for Credit Losses: The Group maintains an allowance for doubtful debtors which represents the best estimate of expected loss inherent in the Group's trade debtors portfolio. This estimate is based upon a two-step policy that results in the total recorded allowance for doubtful accounts. The first step is to record a portfolio reserve based on the aging of the outstanding debtors portfolio and the Group's historical experience with the Group's end markets, customer base and products. The second step is to create a specific reserve for significant accounts as to which the customer's ability to satisfy their financial obligation to the Group is in doubt due to circumstances such as bankruptcy, deteriorating operating results or financial position. In these circumstances, management uses its judgment to record an allowance based on the best estimate of expected loss, factoring in such considerations as the market value of collateral, if applicable. Actual results could differ from those estimates. These estimates and assumptions are reviewed periodically, and the effects of changes, if any, are reflected in the Consolidated Profit and Loss Account in the period that they are determined. The Group reserved $43.7 million and $39.9 million for credit losses as of 31 December 2022 and 2021, respectively.

(h) Stock: Depending on the business, U.S. stock is stated at the lower of cost or market using the last-in, first-out (LIFO) method or the lower of cost and net realizable value (NRV) using the first-in, first-out (FIFO) method. Non-U.S. stock is stated at the lower of cost and NRV using the FIFO method. At 31 December 2022 and 2021, approximately 58% and 54%, respectively, of all stock utilized the LIFO method.

(i) Tangible Fixed Assets: Tangible fixed assets are stated at cost, less accumulated depreciation. Assets placed in service are recorded at cost and depreciated using the straight-line method over the estimated useful life of the asset except for leasehold improvements, which are depreciated over the shorter of their economic useful life or their lease term. The range of useful lives used to depreciate tangible fixed assets is as follows:

Buildings	10	to	50	years
Machinery and equipment	2	to	12	years
Fixture and fittings	5	to	10	years
Software	2	to	7	years
Fleet and rentals	3	to	6	years

Major expenditures for replacements and significant improvements that increase asset values and extend useful lives are also capitalized. Capitalized costs are amortized over their estimated useful lives using the straight-line method. Repairs and maintenance expenditures that do not extend the useful life of the asset are charged to expense as incurred. The carrying amounts of assets that are sold or retired and the related accumulated depreciation are removed from the accounts in the year of disposal, and any resulting gain or loss is reflected within current earnings.

The Group assesses the recoverability of the carrying value of its tangible fixed assets whenever events or changes in circumstances indicate that the carrying amount of the asset group may not be recoverable. Recoverability is measured by a comparison of the carrying amount of an asset group to the future net undiscounted cash flows expected to be generated by the asset group. If the undiscounted cash flows are less than the carrying amount of the asset group, an impairment loss is recognized for the amount by which the carrying value of the asset group exceeds the fair value of the asset group.

(j) Goodwill and Intangible Assets: The Group records as goodwill the excess of the purchase price over the fair value of the net assets acquired in a business combination. Measurement period adjustments may be recorded once a final valuation has been performed. Irish company law requires goodwill and other fixed assets to be written off over a time period which does not exceed their useful life. Consistent with U.S. GAAP, the Group does not amortize goodwill and certain intangibles over an arbitrary period as they are considered to have an indefinite life. Goodwill and other indefinite-lived intangible assets are tested and reviewed annually for impairment during the fourth quarter or whenever there is a significant change in events or circumstances that indicate that the fair value of the asset is more likely than not less than the carrying amount of the asset. In addition, an interim impairment test is completed upon a triggering event or when there is a reorganization of reporting structure or disposal of all or a portion of a reporting unit.

Impairment of goodwill is tested at the reporting unit level. The test compares the carrying amount of the reporting unit to its estimated fair value. If the estimated fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is not impaired. To the extent that the carrying value of the reporting unit exceeds its estimated fair value, an impairment loss would be recognized for the amount by which the reporting unit's carrying amount exceeds its fair value, not to exceed the carrying amount of goodwill in that reporting unit.

Intangible assets such as customer-related intangible assets and other intangible assets with finite useful lives are amortized on a straight-line basis over their estimated economic lives. The weighted-average useful lives approximate the following:

Customer relationships	16 years
Other	7 years

The Group assesses the recoverability of the carrying value of its intangible assets with finite useful lives whenever events or changes in circumstances indicate that the carrying amount of the asset group may not be recoverable. Recoverability is measured by a comparison of the carrying amount of an asset group to the future net undiscounted cash flows expected to be generated by the asset group. If the undiscounted cash flows are less than the carrying amount of the asset group, an impairment loss is recognized for the amount by which the carrying value of the asset group exceeds the fair value of the asset group.

(k) Business Combinations: Acquisitions that meet the definition of a business combination are recorded using the acquisition method of accounting. The Group includes the operating results of acquired entities from their respective dates of acquisition. The Group recognizes and measures the identifiable assets acquired, liabilities assumed, including contingent consideration relating to earnout provisions, and any non-controlling interest as of the acquisition date fair value. The excess, if any, of total consideration transferred in a business combination over the fair value of identifiable assets acquired, liabilities assumed and any non-controlling interest is recognized as goodwill. Costs incurred as a result of a business combination other than costs related to the issuance of debt or equity securities are recorded in the period the costs are incurred. Additionally, at each reporting period, contingent consideration is remeasured to fair value, with changes recorded in *Administrative expenses* in the Consolidated Profit or Loss Account.

The Group assesses any contingent consideration included in the consideration paid of a business combination. The value recorded is based on estimates of future financial projections on revenue under various potential scenarios, in which a Monte Carlo simulation model runs many iterations based on comparable companies' revenue growth rates and their implied revenue volatilities. These cash flow projections are discounted with a risk adjusted rate. Each quarter until such contingent amounts are earned, the fair value of the liability is remeasured at each reporting period and adjusted as a component of operating expenses based on changes to the underlying assumptions. The estimates used to determine the fair value of the contingent consideration liability are subject to significant judgment, specifically revenue growth rates, implied revenue volatilities and discount rates.

(l) Equity Investments: Partially-owned equity affiliates generally represent 20-50% ownership interests in equity investments where the Group demonstrates significant influence, but does not have a controlling financial interest. Partially-owned equity affiliates are accounted for under the equity method.

The Group invests in companies that complement existing products and services further enhancing its product portfolio. The Group records equity investments for which it does not have significant influence and without a readily determinable fair value at cost with adjustments for observable changes in price or impairment as permitted by the measurement alternative. Investments for which the measurement alternative has been elected are assessed for impairment upon a triggering event. Equity investments without a readily determinable fair value were $121.0 million and $115.6 million for the years ended 31 December 2022 and 2021, respectively.

(m) Employee Benefit Plans: The Group provides a range of benefits, including pensions, postretirement and postemployment benefits to eligible current and former employees. Determining the cost associated with such benefits is dependent on various actuarial assumptions, including discount rates, expected return on plan assets, compensation increases, mortality, turnover rates, and healthcare cost trend rates. Actuaries perform the required calculations to determine expense in accordance with U.S. GAAP. Actual results may differ from the actuarial assumptions and are generally accumulated into *Other reserves* and amortized into *Profit for the financial year* over future periods. The Group reviews its actuarial assumptions at each measurement date and makes modifications to the assumptions based on current rates and trends, if appropriate.

(n) Loss Contingencies: Liabilities are recorded for various contingencies arising in the normal course of business. The Group has recorded reserves in the financial statements related to these matters, which are developed using input derived from actuarial estimates and historical and anticipated experience data depending on the nature of the reserve, and in certain instances with consultation of legal counsel, internal and external consultants and engineers. Subject to the uncertainties inherent in estimating future costs for these types of liabilities, the Group believes its estimated reserves are reasonable and does not believe the final determination of the liabilities with respect to these matters would have a material effect on the financial condition, results of operations, liquidity or cash flows of the Group for any year.

(o) Environmental Costs: The Group is subject to laws and regulations relating to protecting the environment. Environmental expenditures relating to current operations are expensed or capitalized as appropriate. Expenditures relating to existing conditions caused by past operations, which do not contribute to current or future turnovers, are expensed. Liabilities for remediation costs are recorded when they are probable and can be reasonably estimated, generally no later than the completion of feasibility studies or the Group's commitment to a plan of action. The assessment of this liability, which is calculated based on existing remediation technology, does not reflect any offset for possible recoveries from insurance companies, and is not discounted.

(p) Asbestos Matters: Prior to the Petition Date, certain of the Group's wholly-owned subsidiaries and former companies were named as defendants in asbestos-related lawsuits in state and federal courts. The Group recorded a liability for actual and anticipated future claims as well as an asset for anticipated insurance settlements. Asbestos-related defense costs were excluded from the asbestos claims liability and were recorded separately as services were incurred. None of the Group's existing or previously-owned businesses were a producer or manufacturer of asbestos. The Group recorded certain income and expenses associated with asbestos liabilities and corresponding insurance recoveries within *Discontinued operations, net of taxation*, as they related to previously divested businesses, except for amounts associated with the predecessor of Murray's asbestos liabilities and corresponding insurance recoveries, which were recorded within continuing operations.

(q) Product Warranties: Standard product warranty accruals are recorded at the time of sale and are estimated based upon product warranty terms and historical experience. The Group assesses the adequacy of its liabilities and will make adjustments as necessary based on known or anticipated warranty claims, or as new information becomes available. The Group's extended warranty liability represents the deferred revenue associated with its extended warranty contracts and is amortized into turnover on a straight-line basis over the life of the contract, unless another method is more representative of the costs incurred. The Group assesses the adequacy of its liability by evaluating the expected costs under its existing contracts to ensure these expected costs do not exceed the extended warranty liability.

(r) Taxation: Current tax represents the expected tax payable on the taxable income for the year, using tax rates and tax laws enacted or substantially enacted at the balance sheet date, along with any adjustment to tax payable in respect of previous years.

Deferred tax assets and liabilities are determined based on temporary differences between financial reporting and tax bases of assets and liabilities, applying enacted tax rates expected to be in effect for the year in which the differences are expected to reverse. The Group recognizes future tax benefits, such as net operating losses and tax credits, to the extent that realizing these benefits is considered in its judgment to be more likely than not. The Group regularly reviews the recoverability of its deferred tax assets considering its historic profitability, projected future taxable income, timing of the reversals of existing temporary differences and the feasibility of its tax planning strategies. Where appropriate, the Group records a valuation allowance with respect to a future tax benefit.

(s) Turnover Recognition: Turnover is recognized when control of a good or service promised in a contract (i.e., performance obligation) is transferred to a customer. Control is obtained when a customer has the ability to direct the use of and obtain substantially all of the remaining benefits from that good or service. A majority of the Group's turnover is recognized at a point-in-time as control is transferred at a distinct point in time per the terms of a contract. However, a portion of the Group's turnover is recognized over time as the customer simultaneously receives control as the Group performs work under a contract. For these arrangements, the cost-to-cost input method is used as it best depicts the transfer of control to the customer that occurs as the Group incurs costs. See Note 5 to the Consolidated Financial Statements for additional information regarding turnover recognition.

(t) Research and Development Costs: The Group conducts research and development activities focused on product and system sustainability improvements such as increasing energy efficiency, developing products that allow for use of lower global warming potential refrigerants, reducing material content in products, and designing products for circularity. These expenditures are expensed when incurred. For the years ended 31 December 2022 and 2021, these expenditures amounted to $211.2 million and $193.5 million, respectively.

(u) Provisions: Provisions are recorded for various liabilities arising in the normal course of business, including litigation and administrative proceedings, environmental matters, product liability, product warranty, worker's compensation and other claims. The Group has recorded provisions in the financial statements related to these matters, which are developed using input derived from actuarial estimates and historical and anticipated experience data depending on the nature of the provision, and in certain instances with consultation of legal counsel, internal and external consultants and engineers. Subject to the uncertainties inherent in estimating future costs for these types of liabilities, the Group believes its estimated provisions are reasonable and does not believe the final determination of the liabilities with respect to these matters would have a material effect on the financial condition, results of operations, liquidity or cash flows of the Group for any year.

(v) Ordinary shares acquired under share repurchase program: Share repurchases are made from time to time in accordance with management's capital allocation strategy, subject to market conditions and regulatory requirements. The cost of shares acquired and canceled upon repurchase are accounted as a deduction from the profit and loss reserve. In addition, an amount equal to the nominal value of any shares canceled is included within the capital redemption reserve as required by Section 106 (4) (a) of the Companies Act 2014. The cost of shares acquired and held upon repurchase is accounted as a deduction from the profit and loss reserve and classified as treasury shares until such shares are canceled, reissued or disposed of. No gain or loss is recognized on the purchase, sale, issue or cancellation of the treasury shares. Where treasury shares are subsequently sold or reissued, any consideration received is included in *Total Equity*. Where treasury shares are subsequently canceled, the nominal value of such shares is transferred to the capital redemption reserve as required by Section 106 (4) (a) of the Companies Act 2014.

(w) Dividend income from shares in group undertakings: Dividend income from Group undertakings are recognized in the period in which they are received.

(x) Distributions paid to equity shareholders: Interim dividends paid to the Company's equity shareholders are recognized in the financial statements when approved by the Board of Directors and paid.

Recent Accounting Pronouncements

The FASB ASC is the sole source of authoritative U.S. GAAP other than the Securities and Exchange Commission (SEC) issued rules and regulations that apply only to SEC registrants. The FASB issues an ASU to communicate changes to the codification. The Group considers the applicability and impact of all ASU's. ASU's not listed below were assessed and determined to be either not applicable or are not expected to have a material impact on the consolidated financial statements.

Recently Adopted Accounting Pronouncements

In November 2021, the FASB issued ASU 2021-10, "Government Assistance (Topic 832): Disclosures by Business Entities about Government Assistance" (ASU 2021-10), which requires additional disclosures regarding government grants and cash contributions. The additional disclosures required by this update include information about the nature of the transactions and the related accounting policy used to account for the transaction, the financial statement line items affected by the transactions and the amounts applicable to each financial statement line item and significant terms and conditions of the transactions, including commitments and contingencies. ASU 2021-10 is effective for annual periods beginning after 15 December 2021 with early adoption permitted. The Group adopted this standard on 1 January 2022 with no material impact on its financial statements.

In October 2021, the FASB issued ASU 2021-08, “Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers” (ASU 2021-08), which requires contract assets and contract liabilities acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with ASC 606, “Revenue from Contracts with Customers” (ASC 606). ASU 2021-08 is effective for fiscal years beginning after 15 December 2022 including interim periods therein with early adoption permitted. The Group early adopted this standard during the fourth quarter of 2021 and applied it retrospectively to all business combinations for which the acquisition date occurred on or after 1 January 2021 resulting in no material impact on its financial statements.

In December 2019, the FASB issued ASU 2019-12, “Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes" (ASU 2019-12), which simplifies certain aspects of income tax accounting guidance in ASC 740, reducing the complexity of its application. Certain exceptions to ASC 740 presented within the ASU include: intraperiod tax allocation, deferred tax liabilities related to outside basis differences, year-to-date loss in interim periods, among others. ASU 2019-12 is effective for annual reporting periods beginning after 15 December 2020 including interim periods therein with early adoption permitted. The Group adopted this standard on 1 January 2021 with no material impact on its financial statements.

In October 2020, the FASB issued ASU 2020-09, "Debt (Topic 470): Amendments to SEC Paragraphs Pursuant to SEC Release No. 33-10762" (ASU 2020-09), which amends Topic 470 and certain other topics to conform to disclosure rules on guaranteed debt offerings in SEC Release No.33-10762. The SEC adopted amendments to the financial disclosure requirements for guarantors and issuers of guaranteed securities registered or being registered in Rule 3-10 of Regulations S-X, and affiliates whose securities registered or being registered in Rule 3-16 of Regulation S-X. The amended rules aim to improve disclosure, reduce compliance burdens for issuers and increase investor protection. ASU 2020-09 is effective on 4 January 2021, pursuant to SEC Release No. 33-10762 with early application permitted. The Group early adopted this standard during the first quarter of 2020 and elected to disclose summarized financial information of the issuers and guarantors on a combined basis within Management's Discussion and Analysis of Financial Condition and Results of Operations.

In August 2018, the FASB issued ASU 2018-15, "Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract" (ASU 2018-15), which aligns the requirements for capitalizing implementation costs in a cloud-computing arrangement service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. In addition, the guidance also clarifies the presentation requirements for reporting such costs in the financial statements. ASU 2018-15 is effective for annual reporting periods beginning after 15 December 2019 with early adoption permitted. The Group adopted this standard on 1 January 2020 on a prospective basis with no material impact on its financial statements.

In June 2016, the FASB issued ASU 2016-13, which changes the impairment model for most financial assets and certain other instruments from an incurred loss model to an expected loss model. In addition, the guidance also requires incremental disclosures regarding allowances and credit quality indicators. ASU 2016-13 was adopted using the modified-retrospective approach and is effective in fiscal years beginning after 15 December 2019, including interim periods within those fiscal years, with early adoption permitted. The Group adopted this standard on 1 January 2020 with no material impact on its financial statements.

Recently Issued Accounting Pronouncements

In September 2022, the FASB issued ASU 2022-04, "Liabilities - Supplier Finance Program (Subtopic 405-50): Disclosure of Supplier Program Finance Obligations", which requires that a company that enters into a supplier finance program disclose sufficient information about the program to allow a user of financial statements to understand the program's nature, activity during the period, changes from period to period, and potential magnitude. To achieve that objective, the company should disclose qualitative and quantitative information about its supplier finance programs. ASU 2022-04 is effective for fiscal periods beginning after 15 December 2022, including interim periods within those fiscal years, with early adoption permitted. This ASU is effective for fiscal years beginning after 15 December 2022, except for the amendment on roll forward information which is effective for fiscal years beginning after 15 December 2023. The Group does not expect the adoption of ASU 2022-04 to have a material impact to its consolidated financial statements.

3. BUSINESS SEGMENT INFORMATION

The Group operates under four regional operating segments designed to create deep customer focus and relevance in markets around the world. The Group determined that its two Europe, Middle East and Africa (EMEA) operating segments meet the aggregation criteria based on similar operating and economic characteristics, resulting in one reportable segment. Therefore, the Group has three regional reportable segments, Americas, EMEA and Asia Pacific. Intercompany sales between segments are immaterial.

- The Group's Americas segment innovates for customers in North America and Latin America. The Americas segment encompasses commercial heating, cooling and ventilation systems, building controls, and energy services and solutions; residential heating and cooling; and transport refrigeration systems and solutions.
- The Group's EMEA segment innovates for customers in the Europe, Middle East and Africa region. The EMEA segment encompasses heating, cooling and ventilation systems, services and solutions for commercial buildings and transport refrigeration systems and solutions.
- The Group's Asia Pacific segment innovates for customers throughout the Asia Pacific region. The Asia Pacific segment encompasses heating, cooling and ventilation systems, services and solutions for commercial buildings and transport refrigeration systems and solutions.

Management measures segment operating performance based on profit for the financial year excluding interest payable, taxation, depreciation and amortization, restructuring, non-cash adjustments for contingent consideration, insurance settlement on property claim in Q3 2022, merger and acquisition-related costs, unallocated corporate expenses and discontinued operations (Segment Adjusted EBITDA). Segment Adjusted EBITDA is not defined under U.S. GAAP and may not be comparable to similarly-titled measures used by other companies and should not be considered a substitute for profit or other results reported in accordance with U.S. GAAP. The Group believes Segment Adjusted EBITDA provides the most relevant measure of profitability as well as earnings power and the ability to generate cash. This measure is a useful financial metric to assess the Group's operating performance from period to period by excluding certain items that it believes are not representative of its core business and the Group uses this measure for business planning purposes. Segment Adjusted EBITDA also provides a useful tool for assessing the comparability between periods and the Group's ability to generate cash from operations sufficient to pay taxes, to service debt and to undertake capital expenditures because it eliminates non-cash charges such as depreciation and amortization expense.

A summary of operations by reportable segment for the years ended December 31 were as follows:

	2022 $m	2021 $m
Turnover		
Americas	12,640.8	10,957.1
EMEA	2,034.5	1,944.9
Asia Pacific	1,316.4	1,234.4
Total Turnover	15,991.7	14,136.4
Segment adjusted EBITDA		
Americas	2,326.3	2,008.8
EMEA	338.1	359.2
Asia Pacific	248.3	228.5
Total Segment Adjusted EBITDA	2,912.7	2,596.5
Reconciliation of Segment Adjusted EBITDA to profit on ordinary activities before taxation		
Total Segment Adjusted EBITDA	2,912.7	2,596.5
Interest payable	(223.5)	(233.7)
Depreciation and amortization	(323.6)	(299.4)
Restructuring costs	(20.7)	(27.0)
Non-cash adjustments for contingent consideration	46.9	—
Insurance settlement on property claim in Q3 2022	25.0	—
Acquisition inventory step-up	(0.8)	—
Unallocated corporate expenses	(243.9)	(245.7)
Profit on ordinary activities before taxation	2,172.1	1,790.7
Depreciation and Amortization		
Depreciation and amortization from reportable segments	303.3	277.4
Unallocated depreciation and amortization	20.3	22.0
Total depreciation and amortization	323.6	299.4
Capital Expenditures		
Capital expenditures from reportable segments	267.6	192.9
Corporate capital expenditures	24.2	30.1
Total capital expenditures	291.8	223.0

At 31 December, a summary of long-lived assets by geographic area were as follows:

	2022 $m	2021 $m
Long-lived assets		
United States	1,413.8	1,287.5
Non-U.S.	584.8	548.1
Total	1,998.6	1,835.6

4. OTHER OPERATING EXPENSE

	2022 $m	2021 $m
Exchange gain (loss)	(17.9)	(10.7)
Other components of net periodic benefit credit/(cost)	(10.6)	(1.6)
Other miscellaneous income/(expense)	(4.0)	9.4
	(32.5)	(2.9)

Other operating expense includes the results from activities other than normal business operations such as foreign currency gains and losses on transactions that are denominated in a currency other than an entity's functional currency. In addition, the Group includes the components of net periodic benefit credit/(cost) for pension and post retirement obligations other than the service cost component. During the year ended 31 December 2022, the Group recorded a $15.0 million settlement charge for a compensation related payment to a retired executive within other components of net periodic benefit credit/(cost).

Other miscellaneous income/(expense) includes items associated with certain legal matters as well as asbestos-related activities. During the year ended 31 December 2021, the Group recorded a gain of $12.8 million related to the release of a pension indemnification liability, partially offset by a charge of $7.2 million to increase its Funding Agreement liability from asbestos-related activities of Murray within other miscellaneous income/(expense). Refer to Note 29, "Commitments and Contingencies," for more information regarding asbestos-related matters.

5. TURNOVER

Performance Obligations

A performance obligation is a distinct good, service or a bundle of goods and services promised in a contract. The Group identifies performance obligations at the inception of a contract and allocates the transaction price to individual performance obligations to faithfully depict the Group's performance in transferring control of the promised goods or services to the customer.

The following are the primary performance obligations identified by the Group:

Equipment. The Group principally generates turnover from the sale of equipment to customers and recognizes turnover at a point in time when control transfers to the customer. Transfer of control is generally determined based on the shipping terms of the contract.

Contracting and Installation. The Group enters into various construction-type contracts to design, deliver and build integrated solutions to meet customer specifications. These transactions provide services that range from the development and installation of new HVAC systems to the design and integration of critical building systems to optimize energy efficiency and overall performance. These contracts have a typical term of less than one year and are considered a single performance obligation as multiple combined goods and services promised in the contract represent a single output delivered to the customer. Turnover associated with contracting and installation contracts are recognized over time with progress towards completion measured using the cost-to-cost input method as the basis to recognize turnover and an estimated profit. To-date efforts for work performed corresponds with and faithfully depicts transfer of control to the customer.

Services and Maintenance. The Group provides various levels of preventative and/or repair and maintenance type service agreements for its customers. The typical length of a contract is 12 months but can be as long as 60 months. Turnover associated with these performance obligations are primarily recognized over time on a straight-line basis over the life of the contract as the customer simultaneously receives and consumes the benefit provided by the Group. However, if historical evidence indicates that the cost of providing these services on a straight-line basis is not appropriate, turnover is recognized over the contract period in proportion to the costs expected to be incurred while performing the service. Turnover for certain repair services that do not meet the criteria for over time turnover recognition and sales of parts are recognized at a point in time.

Extended warranties. The Group enters into various warranty contracts with customers related to its products. A standard warranty generally warrants that a product is free from defects in workmanship and materials under normal use and conditions for a certain period of time. The Group's standard warranty is not considered a distinct performance obligation as it does not provide services to customers beyond assurance that the covered product is free of initial defects. An extended warranty provides a customer with additional time that the Group is liable for covered incidents associated with its products. Extended warranties are purchased separately and can last up to five years. As a result, they are considered separate performance obligations for the Group. Turnover associated with these performance obligations are primarily recognized over time on a straight-line basis over the life of the contract as the customer simultaneously receives and consumes the benefit provided by the Group. However, if historical evidence indicates that the cost of providing these services on a straight-line basis is not appropriate, turnover is recognized over the contract period in proportion to the costs expected to be incurred while performing the service. Refer to Note 30, "Commitments and Contingencies," for more information related to product warranties.

The transaction price allocated to performance obligations reflects the Group's expectations about the consideration it will be entitled to receive from a customer. To determine the transaction price, variable and non-cash consideration are assessed as well as whether a significant financing component exists. The Group includes variable consideration in the estimated transaction price when it is probable that significant reversal of turnover recognized would not occur when the uncertainty associated with variable consideration is subsequently resolved. The Group considers historical data in determining its best estimates of variable consideration, and the related accruals are recorded using the expected value method.

For projects financed through energy savings, the Group provides financial guarantees for in-process work and financial commitments with end dates varying from the current fiscal year through the completion of such transactions that could be triggered in the event of nonperformance. Additionally, the Group has performance guarantees related to completed energy savings contracts that are provided under the maintenance portion of contracting and installation agreements. These performance guarantees represent variable consideration and are estimated as part of the overall transaction price. As of 31 December 2022, the Group has outstanding performance guarantees of approximately $1 billion related to these energy savings contracts that extend from 2023-2048. Since 1995, the Group has recognized approximately $1 million in adjustments to the transaction price as a result of these performance guarantees

The Group enters into sales arrangements that contain multiple goods and services, such as equipment, installation and extended warranties. For these arrangements, each good or service is evaluated to determine whether it represents a distinct performance obligation and whether the sales price for each obligation is representative of standalone selling price. If available, the Group utilizes observable prices for goods or services sold separately to similar customers in similar circumstances to evaluate relative standalone selling price. List prices are used if they are determined to be representative of standalone selling prices. Where necessary, the Group ensures that the total transaction price is then allocated to the distinct performance obligations based on the determination of their relative standalone selling price at the inception of the arrangement.

The Group recognizes turnover for delivered goods or services when the delivered good or service is distinct, control of the good or service has transferred to the customer, and only customary refund or return rights related to the goods or services exist. The Group excludes from turnover taxes it collects from a customer that are assessed by a government authority.

Disaggregated Turnover

Turnover by geography and major type of good or service for the years ended at 31 December was as follows:

	2022 $m	2021 $m
Americas		
Equipment	8,575.1	7,319.8
Services	4,065.7	3,637.3
Total Americas	12,640.8	10,957.1
EMEA		
Equipment	1,420.9	1,328.0
Services	613.6	616.9
Total EMEA	2,034.5	1,944.9
Asia Pacific		
Equipment	934.8	851.0
Services	381.6	383.4
Total Asia Pacific	1,316.4	1,234.4
Total Turnover	15,991.7	14,136.4

Turnover from goods and services transferred to customers at a point in time accounted for approximately 82% (approximately 82% in 2021) of the Group's turnover for the year ended 31 December 2022.

Contract Balances

The opening and closing balances of contract assets and contract liabilities arising from contracts with customers for the period ended 31 December 2022 and 31 December 2021 were as follows:

	Classification	2022 $m	2021 $m
Contract assets - current	Other current assets	201.2	164.8
Contract assets - noncurrent	Other noncurrent assets	239.6	218.5
Contract liabilities - current	Accrued expenses and other current liabilities	1,010.6	805.4
Contract liabilities - noncurrent	Other noncurrent liabilities	471.4	446.6

The timing of turnover recognition, billings and cash collections results in debtors, contract assets, and customer advances and deposits (contract liabilities) on the Consolidated Balance Sheet. In general, the Group receives payments from customers based on a billing schedule established in its contracts. Contract assets relate to the conditional right to consideration for any completed performance under the contract when costs are incurred in excess of billings under the percentage-of-completion methodology. Debtors are recorded when the right to consideration becomes unconditional. Contract liabilities relate to payments received in advance of performance under the contract or when the Group has a right to consideration that is unconditional before it transfers a good or service to the customer. Contract liabilities are recognized as turnover as (or when) the Group performs under the contract. During the years ended 31 December 2022 and 31 December 2021, changes in contract asset and liability balances were not materially impacted by any other factors.

Approximately 55% of the contract liability balance at 31 December 2021 was recognized as turnover during the year ended 31 December 2022. Additionally, approximately 32% of the contract liability balance at 31 December 2022 was classified as noncurrent and not expected to be recognized as turnover in the next 12 months.

6. INTEREST RECEIVABLE AND SIMILAR INCOME

	2022 $m	2021 $m
Short term investments	8.8	3.8
Long term investments	0.4	0.2
	9.2	4.0

7. INTEREST PAYABLE AND SIMILAR CHARGES

	2022 $m	2021 $m
Interest on bank debt (Note 24)	(218.1)	(227.4)
Amortization of debt issue costs (Note 24)	(4.4)	(5.7)
Interest on discounted receivables	(0.1)	(0.1)
Other	(0.9)	(0.5)
	(223.5)	(233.7)

8. OPERATING PROFIT

The following operating expenses have been recognized:

	2022 $m	2021 $m
Amortization of intangible assets (Note 14)	142.7	123.6
Depreciation (Note 15)	209.5	203.8
Restructuring costs	20.7	27.0
Research and development	211.2	193.5

Auditor's Remuneration

In accordance with statutory requirements in Ireland, remuneration (including expenses) of the Group's independent auditors in respect of the statutory audit and other services carried out were as follows:

	PwC Ireland (statutory auditor)		PwC (network firms)		Total	
	2022	2021	2022	2021	2022	2021
	$m	$m	$m	$m	$m	$m
Audit of the Group accounts [a]	0.8	0.7	9.1	8.9	9.9	9.6
Other assurance services [b]	—	—	0.4	0.1	0.4	0.1
Tax advisory services [c]	—	—	1.7	1.8	1.7	1.8
Total	0.8	0.7	11.2	10.8	12.0	11.5

(a) Audit of the Group accounts for the years ended 31 December 2022 and 2021, respectively, were for professional services rendered for the audit of the Parent Company and the Group's annual consolidated financial statements and its internal controls over financial reporting, including quarterly reviews, statutory audits, issuance of consents, review of documents filed with the SEC and comfort letter preparation.

(b) Other assurance services for the year ended 31 December 2022 and 2021 consist of fees related to performing the audit and review of certain financial statements including employee benefit plan audits.

(c) Tax advisory services for the year ended 31 December 2022 and 2021 include consulting and compliance services in the U.S. and non-U.S. locations.

9. EMPLOYEES

Employees

The average monthly number of persons (including executive directors) employed by the Group during the financial year was as follows:

	2022	2021
Business segment	Number	Number
Americas	25,912	25,435
EMEA	4,386	4,298
Asia Pacific	4,581	4,591
Corporate	2,766	2,711
	37,645	37,035

The staff costs for the year for the above employees (including Executive Directors) were:

	2022	2021
	$m	$m
Wages and salaries	3,058.6	2,845.5
Social insurance costs	283.7	268.8
Other retirement benefit costs	212.8	213.5
Other compensation costs	268.9	264.7
	3,824.0	3,592.5

Other compensation costs include private health insurance, tuition reimbursement and expatriate benefits.

Of the total staff costs, $174.8 million (2021: $158.3 million) has been capitalized into stock and tangible fixed assets and $3,649.2 million (2021: $3,434.2 million) has been treated as an expense in the Consolidated Profit and Loss Account.

10. DIRECTORS' REMUNERATION

Directors' remuneration for the financial year 2022 and 2021 is set forth in the table below

	2022 $m	2021 $m
Emoluments	4.9	6.8
Gains by the directors on the exercise of share options	1.9	44.0
Benefits under long-term incentive schemes	3.0	6.2
Contributions to defined benefit retirement schemes	0.2	0.3
	10.0	57.3

Retirement benefits are accruing to one director (2021: two) under a defined benefit scheme.

11. TAXATION

Current and deferred taxation

Profit on ordinary activities before taxation for the years ended 31 December was taxed within the following jurisdictions:

	2022 $m	2021 $m
United States	1,312.3	995.5
Non-U.S.	859.8	795.2
Total	2,172.1	1,790.7

The components of the *Provision for taxation* for the years ended 31 December were as follows:

	2022 $m	2021 $m
Current tax expense (benefit):		
United States	180.4	247.0
Non-U.S.	127.7	111.7
Total:	308.1	358.7
Deferred tax expense (benefit):		
United States	66.5	(42.5)
Non-U.S.	1.3	17.3
Total:	67.8	(25.2)
Total tax expense (benefit):		
United States	246.9	204.5
Non-U.S.	129.0	129.0
Total	375.9	333.5

The *Provision for taxation* differs from the amount of tax on profit on ordinary activities determined by applying the applicable U.S. statutory income tax rate to pretax income, as a result of the following differences:

	Percent of pretax income	
	2022	**2021**
Statutory U.S. rate	21.0 %	21.0 %
Increase (decrease) in rates resulting from:		
Non-U.S. tax rate differential	(2.8)	(2.8)
Tax on U.S. subsidiaries on non-U.S. earnings (a)	0.3	(0.3)
State and local income taxes (b)	1.1	2.0
Valuation allowances (c)	(0.7)	(1.1)
Stock based compensation	(0.8)	(1.8)
Other adjustments	(0.8)	1.6
Effective tax rate	17.3 %	18.6 %

(a) Net of foreign tax credits

(b) Net of changes in state valuation allowances

(c) Primarily federal and non-U.S., excludes state valuation allowances

Tax incentives, in the form of tax holidays, have been granted to the Group in certain jurisdictions to encourage industrial development. The expiration of these tax holidays varies by country. The tax holidays are conditional on the Group meeting certain employment and investment thresholds. The most significant tax holidays relate to the Group's qualifying locations in China, Puerto Rico and Panama. The benefit for the tax holidays for the years ended 31 December 2022 and 2021 was $52.5 million and $32.6 million, respectively.

Deferred tax assets and liabilities

A summary of the deferred tax accounts at 31 December were as follows:

	2022 $m	2021 $m
Deferred tax assets:		
Stock and Debtors	11.2	11.0
Fixed assets and intangible assets	2.6	5.6
Operating lease liabilities	112.0	106.0
Postemployment and other benefit liabilities	254.6	285.7
Product liability	5.5	4.6
Funding liability	—	73.7
Other reserves and accruals	181.5	171.2
Net operating losses and credit carryforwards	346.0	453.3
Other	40.7	29.0
Gross deferred tax assets	954.1	1,140.1
Less: deferred tax valuation allowances	(199.8)	(258.6)
Deferred tax assets net of valuation allowances	754.3	881.5
Deferred tax liabilities:		
Stock and Debtors	(50.7)	(18.6)
Fixed assets and intangibles	(1,069.0)	(1,135.4)
Operating lease right-of-use assets	(110.4)	(104.4)
Postemployment and other benefit liabilities	(15.7)	(21.3)
Other reserves and accruals	(5.5)	(5.2)
Undistributed earnings of foreign subsidiaries	(28.0)	(27.8)
Other	(1.6)	(6.9)
Gross deferred tax liabilities	(1,280.9)	(1,319.6)
Net deferred tax assets (liabilities)	(526.6)	(438.1)

At 31 December 2022, no deferred taxes have been provided for earnings of certain of the Group's subsidiaries, since these earnings have been and under current plans will continue to be permanently reinvested in these subsidiaries. These earnings amount to approximately $3.4 billion which if distributed would result in additional taxes, which may be payable upon distribution, of approximately $350.0 million.

At 31 December 2022, the Group had the following operating loss, capital loss and tax credit carryforwards available to offset taxable income in prior and future years:

	Amount $m	Expiration Period
U.S. Federal net operating loss carryforwards	355.2	2023-2033
U.S. Federal credit carryforwards	105.4	2027-2030
U.S. State net operating loss carryforwards	2,813.4	2023-Unlimited
U.S. State credit carryforwards	27.5	2023-Unlimited
Non-U.S. net operating loss carryforwards	511.0	2023-Unlimited
Non-U.S. credit carryforwards	13.5	Unlimited

The U.S. state net operating loss carryforwards were incurred in various jurisdictions. The non-U.S. net operating loss carryforwards were incurred in various jurisdictions, predominantly in Belgium, Brazil, Luxembourg, Spain and the United Kingdom.

Activity associated with the Group's valuation allowance is as follows:

	2022 $m	2021 $m
At 1 January	258.6	320.5
Increase to valuation allowance	5.9	86.5
Decrease to valuation allowance	(65.1)	(113.5)
Write off against valuation allowance	—	(33.0)
Accumulated other comprehensive income (loss)	0.4	(1.9)
At 31 December	199.8	258.6

During 2022, the Group recorded a $48.2 million reduction in valuation allowances primarily related to certain net state deferred tax assets resulting from U.S. legal entity restructurings and deferred tax assets associated with foreign tax credits as a result of an increase in current year and projected foreign source income. Additional reductions in the valuation allowance related to deferred tax assets associated with foreign tax credits could be recognized in future periods if foreign source income exceeds current projections for the periods 2023 through 2028, the remainder of the carryforward period.

During 2021, the Group recorded a $21.4 million reduction in valuation allowance on deferred tax assets primarily related to foreign tax credits as a result of an increase in current year foreign source income.

Unrecognized tax benefits

The Group has total unrecognized tax benefits of $82.4 million and $65.2 million as of 31 December 2022 and 2021, respectively. The amount of unrecognized tax benefits that, if recognized, would affect the continuing operations effective tax rate are $41.5 million as of 31 December 2022. A reconciliation of the beginning and ending amount of unrecognised tax benefits is as follows:

	2022 $m	2021 $m
At 1 January	65.2	65.4
Additions based on tax positions related to the current year	3.9	1.0
Additions based on tax positions related to prior years	22.5	5.1
Reductions based on tax positions related to prior years	(5.9)	(2.4)
Reductions related to settlements with tax authorities	(0.9)	(0.1)
Reductions related to lapses of statute of limitations	(0.6)	(1.0)
Translation (gain) loss	(1.8)	(2.8)
Ending balance	82.4	65.2

The Group records interest and penalties associated with the uncertain tax positions within *Taxation*. The Group had reserves associated with interest and penalties, net of tax, of $11.3 million and $7.1 million at 31 December 2022 and 31 December 2021, respectively. For the year ended 31 December 2022 and 31 December 2021, the Group recognized a $3.7 million and $0.7 million tax expense, respectively, in interest and penalties, net of tax in continuing operations related to these uncertain tax positions.

The total amount of unrecognized tax benefits relating to the Group's tax positions is subject to change based on future events including, but not limited to, the settlements of ongoing audits and/or the expiration of applicable statutes of limitations. Although the outcomes and timing of such events are highly uncertain, it is reasonably possible that the balance of gross unrecognized tax benefits, excluding interest and penalties, could potentially be reduced by up to approximately $3.7 million during the next 12 months.

The provision for taxation involves a significant amount of management judgment regarding interpretation of relevant facts and laws in the jurisdictions in which the Group operates. Future changes in applicable laws, projected levels of taxable income and tax planning could change the effective tax rate and tax balances recorded by the Group. In addition, tax authorities periodically review income tax returns filed by the Group and can raise issues regarding its filing positions, timing and amount of income or deductions, and the allocation of income among the jurisdictions in which the Group operates. A significant period of time may elapse between the filing of an income tax return and the ultimate resolution of an issue raised by a revenue authority with respect to that return. In the normal course of business the Group is subject to examination by taxing authorities throughout the world, including such major jurisdictions as Belgium, Brazil, Canada, China, France, Germany, Ireland, Italy, Luxembourg, Mexico, Spain, the Netherlands, the United Kingdom and the United States. These examinations on their own, or any subsequent litigation related to the examinations, may result in additional taxes or penalties against the Group. If the ultimate result of these audits differ from original or adjusted estimates, they could have a material impact on the Group’s tax provision. In general, the examination of the Group’s U.S. federal tax returns is complete or effectively settled for years prior to 2016. In general, the examination of the Group’s material non-U.S. tax returns is complete or effectively settled for the years prior to 2013, with certain matters prior to 2013 being resolved through appeals and litigation and also unilateral procedures as provided for under double tax treaties.

In connection with the Transaction, the Group and Ingersoll Rand entered into a tax sharing agreement for the allocation of taxes. The Group has an indemnity payable to Ingersoll Rand, included within other non-current liabilities, in the amount of $1.6 million of tax and interest primarily related to open audit years in non-U.S. tax jurisdictions.

12. ACQUISITIONS AND DIVESTITURES

Acquisitions

On 31 October 2022, the Group acquired 100% of AL-KO Air Technology (AL-KO) for $118.5 million, net of cash acquired, financed through cash on hand. AL-KO designs, engineers, manufactures, sells, installs, and services air handling and extraction systems in commercial applications. Intangible assets associated with this acquisition totaled $49.4 million and primarily relate to customer relationships. The excess purchase price over the estimated fair value of net assets acquired was recognized as goodwill and totaled $52.0 million. The results of the acquisition are reported within the EMEA and Asia Pacific segments from the date of acquisition.

On 1 April 2022, the Group acquired a Commercial HVAC independent dealer, reported within the Americas segment from the date of acquisition, to support the Group's ongoing strategy to expand its distribution network and service area. The aggregate cash paid, net of cash acquired, totaled $110.0 million and was financed through cash on hand. Intangible assets associated with this acquisition totaled $52.7 million and primarily relate to customer relationships. The excess purchase price over the estimated fair value of net assets acquired was recognized as goodwill and totaled $42.5 million.

The preliminary amounts assigned to the major identifiable intangible asset classifications for both acquisitions were as follows

	Weighted-average useful life (in years)	2022 $m
Customer relationships	15	82.9
Other	6	19.2
		102.1

The valuation of intangible assets was determined using an income approach methodology. The fair value of the customer relationship intangible assets were determined using the multi-period excess earnings method based on discounted projected net cash flows associated with the net earnings attributable to the acquired customer relationships. These projected cash flows are estimated over the remaining economic life of the intangible asset and are considered from a market participant perspective. Key assumptions used in estimating future cash flows included projected revenue growth rates and customer attrition rates. The projected future cash flows are discounted to present value using an appropriate discount rate. The Group has not included pro forma financial information for the acquisitions as the pro forma impact was deemed not material.

On 15 October 2021, the Group acquired 100% of Farrar Scientific Corporation's (Farrar Scientific) assets, including its patented ultra-low temperature control technologies, a development and assembly operation in Marietta, Ohio, and a specialized team of engineers, sales engineers, operators, and technicians. Farrar Scientific is a leader in ultra-low temperature control for biopharmaceutical and other life science applications. The results of Farrar Scientific are reported within the Americas segment from the date of acquisition.

The Group paid $251.2 million in initial cash consideration, financed through cash on hand, and agreed to contingent consideration of up to $115.0 million to be paid in 2025, tied to the attainment of key revenue targets during the period of 1 January 2022 through 31 December 2024. The purchase price for the acquisition was expected to be $349.9 million, comprised of the upfront cash consideration of $251.2 million paid on 15 October 2021 and the fair value of the contingent consideration at the time of closing the acquisition of $98.7 million. See Note 26 to the Consolidated Financial Statements for additional information regarding fair value of contingent consideration.

The aggregate purchase price has been allocated to the assets acquired and liabilities assumed based on the estimate of fair market value of such assets and liabilities at the date of acquisition. Intangible assets associated with the acquisition totaled $140.7 million and primarily relate to customer relationships. The excess purchase price over the estimated fair value of net assets acquired was recognized as goodwill and totaled $203.6 million.

The Group recorded identifiable intangible assets based on their estimated fair value, which consisted of the following:

	Weighted-average useful life (in years)	2021 $m
Customer relationships	14	105.2
Other	6	35.5
Total intangible assets		140.7

The goodwill is primarily attributable to the fair value of market share and revenue growth from Farrar Scientific. The benefit of access to the workforce is an additional element of goodwill. For income tax purposes, the acquisition was an asset purchase and the goodwill will be deductible for tax purposes. The Group has not included pro forma financial information as the pro forma impact was deemed not material.

Divestitures

The components of *Discontinued operations, net of taxation* for the years ended 31 December were as follows:

	2022 $m	2021 $m
Turnover	—	—
Profit (loss) from discontinued operations before taxation	(26.9)	(39.3)
Taxation	5.4	18.7
Discontinued operations, net of taxation	(21.5)	(20.6)

The table above presents the financial statement line items that support amounts included in *Discontinued operations, net of tax*. For the year ended 31 December 2022, profit (loss) from discontinued operations before taxation included a charge of $16.5 million to support Aldrich's ongoing legal costs in accordance with the Group's Funding Agreement. For the year ended 31 December 2021, profit (loss) from discontinued operations before taxation included a charge of $14.0 million to increase the Group's Funding Agreement liability from asbestos-related activities of Aldrich as well as pension and post retirement obligations and environmental costs related to businesses formerly owned by the Group.

Other Discontinued Operations

Other discontinued operations, net of taxation related to retained obligations from previously sold businesses that primarily include ongoing expenses for postretirement benefits, product liability and legal costs. In addition, the Group includes its obligations under the Funding Agreement for the asbestos-related activities of Aldrich through the Petition Date.

The components of *Discontinued operations, net of taxation* for the years ended 31 December were as follows:

		2021		2020
		$m		$m
Ingersoll Rand Industrial, net of taxation	$	(6.1)	$	0.1
Asbestos-related activities of Aldrich (post-Petition Date)		(12.4)		(13.3)
Other discontinued operations, net of taxation		(3.0)		(7.4)
Discontinued operations, net of taxation	$	(21.5)	$	(20.6)

Refer to Note 29, "Commitments and Contingencies," for more information regarding the deconsolidation and asbestos-related matters.

13. EARNINGS PER SHARE (EPS)

Basic EPS is calculated by dividing the *Profit attributable to the equity holders of Trane Technologies plc* by the weighted-average number of ordinary shares outstanding for the applicable period. Diluted EPS is calculated after adjusting the denominator of the basic EPS calculation for the effect of all potentially dilutive ordinary shares, which in the Company's case, includes shares issuable under share-based compensation plans. The following table summarizes the weighted-average number of ordinary shares outstanding for basic and diluted earnings per share calculations:

In millions	2022	2021
Weighted-average number of basic shares outstanding	232.6	238.7
Shares issuable under incentive stock plans	2.3	3.6
Weighted-average number of diluted shares outstanding	234.9	242.3
Anti-dilutive shares	0.8	—
Dividends declared per ordinary share	2.68	2.36

14. INTANGIBLE ASSETS

At 31 December, the major classes of intangible assets were as follows:

	Goodwill	Trademarks & Tradenames	Customer Relationships	Other	Total
Cost:					
At 1 January 2022	5,730.6	2,630.4	2,110.7	241.0	10,712.7
Acquisitions	96.3	4.9	85.5	14.3	201.0
Exchange differences	(98.3)	(1.6)	(12.5)	(3.3)	(115.7)
At 31 December 2022	5,728.6	2,633.7	2,183.7	252.0	10,798.0
Accumulated amortization:					
At 1 January 2022	225.8	1.8	1,475.3	199.4	1,902.3
Charge for the year	—	1.1	126.9	14.7	142.7
Exchange differences	(0.9)	—	(10.1)	(3.7)	(14.7)
At 31 December 2022	224.9	2.9	1,592.1	210.4	2,030.3
Net book amount					
At 1 January 2022	5,504.8	2,628.6	635.4	41.6	8,810.4
At 31 December 2022	5,503.7	2,630.8	591.6	41.6	8,767.7

Intangible asset amortization expense for 2022 and 2021 was $142.7 million and $123.6 million, respectively.

Future estimated amortization expense on existing intangible assets in each of the next five years amounts to approximately:

	$m
2023	143.0
2024	141.0
2025	110.0
2026	57.0
2027	31.0

The changes in the carrying amount of goodwill are as follows:

	Americas	EMEA	Asia Pacific	Total
	$m	$m	$m	$m
Net balance at 1 January 2022	4,185.2	740.8	578.8	5,504.8
Acquisitions [(1)]	45.3	23.9	27.1	96.3
Currency translation	(3.7)	(49.8)	(43.9)	(97.4)
Net balance at 31 December 2022	4,226.8	714.9	562.0	5,503.7

[(1)] Refer to Note 12, "Acquisitions and Divestitures" for more information regarding acquisitions.

The net goodwill balances at 31 December 2022 and 2021 include $2,496.0 million of accumulated impairment, primarily related to the Americas segment. The accumulated impairment relates entirely to a charge recorded in 2008.

15. TANGIBLE ASSETS

At 31 December the major classes of tangible assets were as follows:

	Land and Buildings	Machinery and Equipment	Fleet and Rentals	Fixtures and Fittings	Software	Construction In Progress	Total
	$m	$m	$m	$m	$m	$m	$m
Cost:							
At 1 January 2022	679.2	1,100.2	416.9	171.6	601.6	246.6	3,216.1
Additions at cost	60.0	138.9	51.2	8.5	23.9	70.2	352.7
Transfers	15.8	—	(0.1)	—	—	(11.0)	4.7
Exchange differences	(9.3)	(16.7)	(14.8)	(5.3)	(1.3)	(0.8)	(48.2)
Acquisitions	1.2	15.9	2.9	0.9	0.3	3.8	25.0
Disposals	(12.7)	(53.1)	(5.9)	(9.3)	(20.9)	—	(101.9)
Impairment	(0.1)	—	—	—	—	—	(0.1)
Other	—	1.1	0.8	(0.1)	9.7	(11.2)	0.3
At 31 December 2022	734.1	1,186.3	451.0	166.3	613.3	297.6	3,448.6
Depreciation:							
At 1 January 2022	322.5	648.2	199.6	127.2	519.8	—	1,817.3
Charge for the year	25.5	93.8	36.2	12.0	42.0	—	209.5
Transfers	6.6	—	—	—	—	—	6.6
Exchange differences	(3.4)	(11.9)	(7.5)	(3.9)	(1.1)	—	(27.8)
Disposals	(11.8)	(47.4)	(4.3)	(9.0)	(20.6)	—	(93.1)
Impairment	—	—	—	—	—	—	—
Other	—	—	0.2	(0.2)	—	—	—
At 31 December 2022	339.4	682.7	224.2	126.1	540.1	—	1,912.5
Net book amount							
At 1 January 2022	356.7	452.0	217.3	44.4	81.8	246.6	1,398.8
At 31 December 2022	394.7	503.6	226.8	40.2	73.2	297.6	1,536.1

During the financial year, tangible fixed assets with a net carrying amount of $8.8 million were disposed of. The assets had a cost of $101.9 million and accumulated depreciation of $93.1 million. The loss on the disposal of these tangible assets was $4.0 million (2021: gain of $6.8 million).

16. LEASES

The Group's lease portfolio includes various contracts for real estate, vehicles, information technology and other equipment. At contract inception, the Group determines a lease exists if the contract conveys the right to control an identified asset for a period of time in exchange for consideration. Control is considered to exist when the lessee has the right to obtain substantially all of the economic benefits from the use of an identified asset as well as the right to direct the use of that asset. If a contract is considered to be a lease, the Group recognizes a lease liability based on the present value of the future lease payments, with an offsetting entry to recognize a right-of-use asset. Options to extend or terminate a lease are included when it is reasonably certain an option will be exercised. As a majority of the Group's leases do not provide an implicit rate within the lease, an incremental borrowing rate is used which is based on information available at the commencement date.

The following table includes a summary of the Group's lease portfolio and Balance Sheet classification:

	Classification	31 December 2022 $m	31 December 2021 $m
Assets			
Operating lease right-of-use assets (1)	Other noncurrent assets	462.5	436.8
Liabilities			
Operating lease current	Other current liabilities	155.8	147.3
Operating lease noncurrent	Other noncurrent liabilities	313.5	296.0
Weighted average remaining lease term		3.9 years	3.9 years
Weighted average discount rate		3.0 %	2.3 %

(1) Prepaid lease payments and lease incentives are recorded as part of the right-of-use asset. The net impact was $6.8 million and $6.5 million at 31 December 2022 and 31 December 2021, respectively.

The Group accounts for each separate lease component of a contract and its associated non-lease component as a single lease component. In addition, the Group utilizes a portfolio approach for the vehicle, information technology and equipment asset classes as the application of the lease model to the portfolio would not differ materially from the application of the lease model to the individual leases within the portfolio.

At 31 December, right-of-use assets consisted of the following:

	$m
At 1 January 2022	436.8
Additions/modifications	142.3
Depreciation	(116.6)
At 31 December 2022	462.5

The following table includes lease costs and related cash flow information for the year ended 31 December:

	2022 $m	2021 $m
Operating lease expense	179.4	168.3
Variable lease expense	28.2	24.5
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	179.0	167.9
Right-of-use assets obtained in exchange for new operating lease liabilities	177.0	163.2

Operating lease expense is recognized on a straight-line basis over the lease term. In addition, the Group has certain leases that contain variable lease payments which are based on an index, a rate referenced in the lease or on the actual usage of the leased asset. These payments are not included in the right-of-use asset or lease liability and are expensed as incurred as variable lease expense.

Maturities of lease obligations as of 31 December 2022 were as follows:

	$m
Operating leases:	
2022	168.9
2023	129.4
2024	87.4
2025	61.4
2026	31.2
After 2026	30.3
Total lease payments	508.6
Less: Interest	(39.3)
Present value of lease liabilities	469.3

17. FINANCIAL ASSETS

The Group's financial assets were comprised of:

	Investment in associates and joint ventures (a)	Capital investments (b)	Deposits	Trade & Loans Receivable	Long term notes receivable	Life insurance cash surrender value	Total
	$m	$m	$m	$m	$m	$m	$m
At 1 January 2022	126.6	115.6	10.2	8.1	5.4	15.4	281.3
Capital Stock Investment	—	6.1	—	—	—	—	6.1
Income/(Expenses)	26.2	—	—	—	—	—	26.2
Dividend	(17.6)	—	—	—	—	—	(17.6)
Other	0.6	(0.3)	0.4	0.1	(0.3)	(0.2)	0.3
At 31 December 2022	135.8	121.4	10.6	8.2	5.1	15.2	296.3

(a) Investments in associates and joint ventures includes the 25% interest in Alliance Compressors LLC, the 50% interest in Mitsubishi JV investment, the 49% interest in Dallah Trane JV investment, and the 49% interest in Magenta Technologies, LLC.

(b) Capital investments consists of the Group's equity investments without a readily determinable fair value.

18. STOCK

At 31 December the major classes of stock were as follows:

	2022	2021
	$m	$m
Raw materials	509.6	404.6
Work-in-process	333.8	215.9
Finished goods	1,280.3	982.9
	2,123.7	1,603.4
LIFO reserve	(129.9)	(72.6)
Total	1,993.8	1,530.8

The Group performs periodic assessments to determine the existence of obsolete, slow-moving and non-saleable stock and records necessary provisions to reduce such stock to the lower of cost and NRV. Reserve balances, primarily related to obsolete and slow-moving stock, were $94.3 million and $79.0 million at 31 December 2022 and 31 December 2021, respectively.

19. DEBTORS - AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022	2021
	$m	$m
Amounts falling due within one year:		
Trade debtors	2,751.2	2,395.1
Less: Provision for impairment of receivables	(43.7)	(39.9)
Less: Reserve for customer claims	(3.3)	(2.6)
Trade debtors - net	2,704.2	2,352.6
Trade notes receivable	8.0	6.5
Other debtors	67.9	70.3
Prepayments	351.1	307.7
Income tax receivables	33.7	28.7
	3,164.9	2,765.8

20. CASH AT BANK AND IN HAND

	2022	2021
	$m	$m
Cash at bank and in hand	1,220.5	2,159.2

21. DEBTORS – AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR

	2022	2021
	$m	$m
Other debtors	399.6	370.3
Benefit trust assets	144.7	183.7
Prepayments	5.9	5.9
Deferred tax asset	89.6	101.7
	639.8	661.6

22. CREDITORS – AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022 $m	2021 $m
Debt and credit facilities (Note 24)	1,048.0	350.4
Short term lease obligations (Note 16)	155.8	147.3
Payments received on account	368.3	256.3
Trade creditors	2,091.6	1,787.3
Other creditors	633.0	570.6
Corporation tax	38.8	53.9
Other taxes	27.3	29.4
Value added tax	32.3	14.4
Income taxes	19.1	52.5
Excise duty	118.6	124.1
Derivatives payable	11.9	16.8
Deferred income	360.4	298.8
Accruals	382.2	348.4
	5,287.3	4,050.2

Creditors for taxation and social insurance included in the table above:	2022 $m	2021 $m
Irish PAYE	1.9	2.3
Other income tax	19.1	52.5
Corporation tax	38.8	53.9
Value added tax	32.3	14.4
Other tax	27.3	29.4
	119.4	152.5

Trade creditors principally comprise amounts outstanding for day to day purchases and ongoing costs and are payable at various dates in the next three months in accordance with the creditors usual and customary credit terms. The directors consider that the carrying amount of trade creditors approximates to fair value.

Other creditors and accruals falling due within one year and creditors for tax and social insurance are payable in the timeframe set down in the relevant legislation.

23. CREDITORS – AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR

Amounts falling due after more than one year	2022 $m	2021 $m
Long term debt (Note 24)	3,788.3	4,491.7
Long term lease obligations (Note 16)	313.5	296.0
Accruals	303.9	344.5
Deferred income	14.8	17.0
	4,420.5	5,149.2

Amounts falling due after more than five years	2022 $m	2021 $m
Accruals	—	—
Deferred income	1.8	2.8
	1.8	2.8

24. DEBT AND CREDIT FACILITIES

At 31 December, short-term borrowings and current maturities of long-term debt consisted of the following:

	2022	2021
	$m	$m
Debentures with put feature	340.8	342.9
4.250% Senior notes due 2023	699.7	—
Other current maturities of long-term debt	7.5	7.5
Total	1,048.0	350.4

The Group's short-term obligations primarily consist of debentures with put features and current maturities of long-term debt. The weighted-average interest rate for short-term borrowings and current maturities of long-term debt at 31 December 2022 and 2021 was 4.9% and 6.3%, respectively.

Refer to Note 39, "Events Since The End of The Financial Year" for more information regarding the completion of note offerings.

Commercial Paper Program

The Group uses borrowings under its commercial paper program for general corporate purposes. The maximum aggregate amount of unsecured commercial paper notes available to be issued, on a private placement basis, under the commercial paper program is $2.0 billion as of 31 December 2022. Under the commercial paper program, the Group may issue notes from time to time through Trane Technologies Global Holding Company Limited or Trane Technologies Financing Limited. Each of Trane Technologies plc, Trane Technologies Irish Holdings Unlimited Company, Trane Technologies Lux International Holding Company S.à.r.l., Trane Technologies Global Holding Company Limited and Trane Technologies Company LLC provided irrevocable and unconditional guarantees for any notes issued under the commercial paper program. The Group had no outstanding balance under its commercial paper program as of 31 December 2022 and 31 December 2021.

Debentures with Put Feature

At 31 December 2022 and 31 December 2021, the Group had $340.8 million and $342.9 million, respectively, of fixed rate debentures outstanding which contain a put feature that the holders may exercise on each anniversary of the issuance date. If exercised, the Group is obligated to repay in whole or in part, at the holder’s option, the outstanding principal amount of the debentures plus accrued interest. If these options are not exercised, the final contractual maturity dates would range between 2027 and 2028. Holders of these debentures had the option to exercise the put feature on each of the outstanding debentures in 2022, subject to the notice requirement. No material exercises were made in 2022 or 2021.

At 31 December long-term debt excluding current maturities consisted of:

	2022	2021
	$m	$m
4.250% Senior notes due 2023	—	699.1
7.200% Debentures due 2023-2025	14.9	22.4
3.550% Senior notes due 2024	498.7	498.0
6.480% Debentures due 2025	149.7	149.7
3.500% Senior notes due 2026	398.4	397.8
3.750% Senior notes due 2028	546.8	546.2
3.800% Senior notes due 2029	745.8	745.0
5.750% Senior notes due 2043	495.2	495.0
4.650% Senior notes due 2044	296.4	296.3
4.300% Senior notes due 2048	296.4	296.3
4.500% Senior notes due 2049	346.0	345.9
Total	3,788.3	4,491.7

Scheduled maturities of *long-term debt,* including current maturities, as of 31 December 2022 are as follows:

	$m
2023	1,048.0
2024	506.2
2025	157.2
2026	398.4
2027	—
Thereafter	2,726.5
Total	4,836.3

Other Credit Facilities

On 25 April 2022, the Group entered into a new $1.0 billion senior unsecured revolving credit facility which matures in April 2027 (2027 Credit Facility) and terminated its $1.0 billion credit facility that would have expired in April 2023. As a result, the Group maintains two $1.0 billion senior unsecured revolving credit facilities, one of which matures in June 2026 (2026 Credit Facility) and the other which matures in April 2027 (collectively, the Facilities) through its wholly-owned subsidiaries, Trane Technologies HoldCo Inc., Trane Technologies Global Holding Company Limited and Trane Technologies Financing Limited (collectively, the Borrowers). On 30 June 2022, the Group amended its 2026 Credit Facility to include a Secured Overnight Financing Rate (SOFR) borrowing index provision and to eliminate the London Interbank Offer Rate (LIBOR) index provision. These provisions are consistent with the 2027 Credit Facility. Additionally, both Facilities include Environmental, Social, and Governance (ESG) metrics related to two of the Group’s sustainability commitments: a reduction in greenhouse gas intensity and an increase in the percentage of women in management. The Group's annual performance against these ESG metrics may result in price adjustments to the commitment fee and applicable interest rate.

The Facilities provide support for the Group’s commercial paper program and can be used for working capital and other general corporate purposes. Trane Technologies plc, Trane Technologies Irish Holdings Unlimited Company, Trane Technologies Lux International Holding Company S.à.r.l. and Trane Technologies Company LLC each provide irrevocable and unconditional guarantees for these Facilities. In addition, each Borrower will guarantee the obligations under the Facilities of the other Borrowers. Total commitments of $2.0 billion were unused at 31 December 2022 and 31 December 2021.

Fair Value of Debt

The fair value of the Group's debt instruments at 31 December 2022 and 31 December 2021 was $4.6 billion and $5.6 billion, respectively. The Group measures the fair value of its debt instruments for disclosure purposes based upon observable market prices quoted on public exchanges for similar assets. These fair value inputs are considered Level 2 within the fair value hierarchy.

25. FINANCIAL INSTRUMENTS

In the normal course of business, the Group is exposed to certain risks arising from business operations and economic factors. These fluctuations can increase the cost of financing, investing and operating the business. The Group uses various financial instruments, including derivative instruments, to manage the risks associated with interest rate, commodity price and foreign currency exposures. These financial instruments are not used for trading or speculative purposes. The Group recognizes all derivatives on the Consolidated Balance Sheets at their fair value as either assets or liabilities.

On the date a derivative contract is entered into, the Group designates the derivative instrument as a cash flow hedge of a forecasted transaction or as an undesignated derivative. The Group formally documents its hedge relationships, including identification of the derivative instruments and the hedged items, as well as its risk management objectives and strategies for undertaking the hedge transaction. This process includes linking derivative instruments that are designated as hedges to specific assets, liabilities or forecasted transactions.

The Group assesses at inception and at least quarterly thereafter, whether the derivatives used in cash flow hedging transactions are highly effective in offsetting the changes in the cash flows of the hedged item. To the extent the derivative is deemed to be a highly effective hedge, the fair market value changes of the instrument are recorded to *Other reserves*. If the hedging relationship ceases to be highly effective, or it becomes probable that a forecasted transaction is no longer expected to occur, the hedging relationship will be undesignated and any future gains and losses on the derivative instrument will be recorded in *Profit for the financial year.*

The fair values of derivative instruments included within the Consolidated Balance Sheets as of 31 December were as follows:

	Derivative assets		Derivative liabilities	
	2022	2021	2022	2021
	$m	$m	$m	$m
Derivatives designated as hedges:				
Currency derivatives	2.0	0.1	1.6	2.7
Commodity derivatives	2.3	4.9	8.8	0.2
Derivatives not designated as hedges:				
Currency derivatives	0.8	10.5	1.5	14.0
Total derivatives	5.1	15.5	11.9	16.9

Asset and liability derivatives included in the table above are recorded within *Debtors* and *Creditors: Amounts falling due within one year*, respectively.

Currency Derivative Instruments

The notional amount of the Group's currency derivatives was $350 million and $500 million at 31 December 2022 and 2021, respectively. At 31 December 2022 and 2021, a net gain of $0.3 million and net loss of $2.2 million, net of tax, respectively, was included in *Other reserves* related to the fair value of the Group's currency derivatives designated as accounting hedges. The amount expected to be reclassified into *Profit for the financial year* over the next twelve months is a gain of $0.3 million. The actual amounts that will be reclassified to *Profit for the financial year* may vary from this amount as a result of changes in market conditions. Gains and losses associated with the Group's currency derivatives not designated as hedges are recorded in *Profit for the financial year* as changes in fair value occur. At 31 December 2022, the maximum term of the Group's currency derivatives was approximately 12 months.

Commodity Derivative Instruments

At 31 December 2022, and 2021, a net loss of $4.9 million and a net gain of $3.5 million, net of tax, was included in AOCI related to the fair market value of the Group's commodity derivatives designated as accounting hedges. A change in fair value of commodity derivative instruments deemed highly effective is included in *Other reserves* and is reclassified to *Cost of sales* in the period the purchase of the commodity impacts *Profit for the financial year*. The amount expected to be reclassified into *Profit for the financial year* over the next twelve months is a net loss of $4.9 million. The actual amounts that will be reclassified to *Profit for the financial year* may vary from this amount as a result of changes in market conditions. At 31 December 2022, the maximum term of the Group's commodity derivatives was 12 months.

The Group had the following outstanding contracts to hedge forecasted commodity purchases:

	Volume Outstanding as of	
	2022	2021
Aluminum	23,088 metric tons	16,488 metric tons
Copper	6,241,625 pounds	4,035,000 pounds

Other Derivative Instruments

Prior to 2015, the Group utilized forward-starting interest rate swaps and interest rate locks to manage interest rate exposure in periods prior to the anticipated issuance of certain fixed-rate debt. These instruments were designated as cash flow hedges and had a notional amount of $1,250.0 million. Consequently, when the contracts were settled upon the issuance of the underlying debt, any realized gains or losses in the fair values of the instruments were deferred into *Other reserves*. These deferred gains or losses are subsequently recognized in *Interest payable and similar charges* over the term of the related notes. The net unrecognized gain in *Other reserves* was $4.0 million and $4.7 million at 31 December 2022 and at 31 December 2021. The net deferred gain at 31 December 2022 will continue to be amortized over the term of notes with maturities ranging from 2023 to 2044. The amount expected to be amortized over the next twelve months is a net gain of $0.3 million. The Group has no forward-starting interest rate swaps or interest rate lock contracts outstanding at 31 December 2022 or 2021.

The following table represents the amounts associated with derivatives designated as hedges affecting *Profit on ordinary activities before taxation* and *Other reserves* for the years ended 31 December:

	Amount of gain (loss) recognized in Other reserves		Location of gain (loss) reclassified from Other reserves and recognized into Profit on ordinary activities before taxation	Amount of gain (loss) reclassified from Other reserves and recognized into Profit for the financial year	
	2022	2021		2022	2021
	$m	$m		$m	$m
Currency derivatives - continuing[(1)]	(7.2)	(4.1)	Cost of sales	(9.2)	3.7
Commodity derivatives	(17.1)	5.7	Cost of sales	(1.1)	2.0
Interest rate swaps & locks	—	—	Interest payable and similar charges	0.7	0.7
Total	(24.3)	1.6		$ (9.6)	6.4

[(1)] Amounts excluded from effectiveness testing and recognized into *Cost of sales* based on changes in fair value and amortization was a loss of $0.6 million for the year ended 31 December 2022 (2021: $0.7 million).

The following table represents the amounts associated with derivatives not designated as hedges affecting *Profit for the financial year* for the years ended 31 December:

		Amount of gain (loss) recognized in Profit after taxation	
		2022	2021
		$m	$m
Currency derivatives - continuing	Other operating expense	(8.0)	7.9
Total		(8.0)	7.9

The gains and losses associated with the Group's undesignated currency derivatives are materially offset in *Profit for the financial year* by changes in the fair value of the underlying transactions.

Concentration of Credit Risk

The counterparties to the Group's forward contracts consist of a number of investment grade major international financial institutions. The Group could be exposed to losses in the event of nonperformance by the counterparties. However, the credit ratings and the concentration of risk in these financial institutions are monitored on a continuous basis and present no significant credit risk to the Group.

26. FAIR VALUE MEASUREMENTS

ASC 820, "Fair Value Measurement," (ASC 820) defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 also establishes a three-level fair value hierarchy that prioritizes information used in developing assumptions when pricing an asset or liability as follows:

- *Level 1:* Observable inputs such as quoted prices in active markets;
- *Level 2:* Inputs, other than quoted prices in active markets, that are observable either directly or indirectly; and
- *Level 3:* Unobservable inputs where there is little or no market data, which requires the reporting entity to develop its own assumptions.

Observable market data is required to be used in making fair value measurements when available. When inputs used to measure fair value fall within different levels of the hierarchy, the level within which the fair value measurement is categorized is based on the lowest level input that is significant to the fair value measurement.

The following table presents the Group's fair value hierarchy for those assets and liabilities measured at fair value on a recurring basis as of 31 December 2022:

		Fair value measurements		
	Fair Value	**Level 1**	**Level 2**	**Level 3**
	$m	**$m**	**$m**	**$m**
Assets:				
Derivative instruments	5.1	—	5.1	—
Liabilities:				
Derivative instruments	11.9	—	11.9	—
Contingent consideration	49.3	—	—	49.3

The following table presents the Group's fair value hierarchy for those assets and liabilities measured at fair value on a recurring basis as of 31 December 2021:

		Fair value measurements		
	Fair Value	**Level 1**	**Level 2**	**Level 3**
	$m	**$m**	**$m**	**$m**
Assets:				
Derivative instruments	15.5	—	15.5	—
Liabilities:				
Derivative instruments	16.9	—	16.9	—
Contingent consideration	96.2	—	—	96.2

Derivative instruments include forward foreign currency contracts and instruments related to non-functional currency balance sheet exposures. The fair value of the derivative instruments are determined based on a pricing model that uses spot rates and forward prices from actively quoted currency markets that are readily accessible and observable. The fair value of the commodity derivatives is valued under a market approach using publicized prices, where applicable, or dealer quotes.

On 15 October 2021, the Group acquired 100% of Farrar Scientific Corporation's (Farrar Scientific) assets. In connection with the acquisition, the Group agreed to contingent consideration of up to $115.0 million to be paid in 2025, tied to the attainment of key financial targets during the period 1 January 2022 through 31 December 2024. This additional payment, to the extent earned, will be payable in cash. The fair value of the contingent consideration is determined using the Monte Carlo simulation model based on projections of turnover for Farrar Scientific during the period of 1 January 2022 through 31 December 2024, implied turnover volatility and a risk adjusted discount rate. Each quarter, the Group is required to remeasure the fair value of the liability as assumptions change and such non-cash adjustments are recorded in *Administrative expenses* in the Consolidated Profit or Loss Account.

Contingent consideration related to acquisitions are measured at fair value each reporting period using Level 3 unobservable inputs. The changes in the fair value of the Group's Level 3 liabilities during the year ended 31 December 2022 are as follows:

	$m
At 1 January 2022	96.2
Fair value of earnout payment recorded in connection with acquisition	—
Change in fair value of earnout	(46.9)
At 31 December 2022	49.3

The following inputs and assumptions were used in the Monte Carlo simulation model to estimate the fair value of the contingent consideration at 31 December 2022 and 31 December 2021:

	2022	2021
Discount rate	12.00 %	8.00 %
Volatility	20.00 %	20.00 %

Refer to Note 12, "Acquisition and Divestitures" for more information regarding the contingent consideration.

The carrying values of cash and cash equivalents, accounts receivable and accounts payable are a reasonable estimate of their fair value due to the short-term nature of these instruments. There have been no transfers between levels of the fair value hierarchy.

27. PENSIONS AND POSTRETIREMENT BENEFITS OTHER THAN PENSIONS

The Group sponsors several U.S. defined benefit and defined contribution plans covering substantially all of the Group's U.S. employees. Additionally, the Group has many non-U.S. defined benefit and defined contribution plans covering eligible non-U.S. employees. Postretirement benefits other than pensions (OPEB) provide healthcare benefits, and in some instances, life insurance benefits for certain eligible employees.

Pension Plans

The non-contributory defined benefit pension plans covering non-collectively bargained U.S. employees provide benefits on a final average pay formula while plans for most collectively bargained U.S. employees provide benefits on a flat dollar benefit formula or a percentage of pay formula. The non-U.S. pension plans generally provide benefits based on earnings and years of service. The Group also maintains additional other supplemental plans for officers and other key or highly compensated employees.

The following table details information regarding the Group’s pension plans at 31 December:

	2022 $m	2021 $m
Change in benefit obligations:		
Benefit obligation at 1 January	3,394.5	3,662.8
Service cost	47.5	50.9
Interest cost	70.3	58.6
Employee contributions	0.9	0.9
Amendments	—	(0.3)
Actuarial (gains) losses [1]	(810.3)	(121.9)
Benefits paid	(243.1)	(200.6)
Currency translation	(59.6)	(28.4)
Curtailments, settlements and special termination benefits	(5.0)	(20.0)
Other, including expenses paid	(9.1)	(7.5)
Benefit obligation at 31 December	2,386.1	3,394.5
Change in plan assets:		
Fair value at 1 January	2,993.8	3,114.6
Actual return on assets	(706.7)	73.5
Group contributions	90.5	55.9
Employee contributions	0.9	0.9
Benefits paid	(243.1)	(200.6)
Currency translation	(62.6)	(21.8)
Settlements	(5.0)	(20.5)
Other, including expenses paid	(16.2)	(8.2)
Fair value of assets at 31 December	2,051.6	2,993.8
Net unfunded liability	(334.5)	(400.7)
Amounts included in the balance sheet:		
Debtors: amounts falling due after more than one year	61.0	82.2
Provisions for liabilities	(27.3)	(56.4)
Pensions & similar obligations	(368.2)	(426.5)
Net amount recognized	(334.5)	(400.7)

[1] Actuarial (gains) losses primarily resulted from changes in discount rates

It is the Group’s objective to contribute to the pension plans to ensure adequate funds, and no less than required by law, are available in the plans to make benefit payments to plan participants and beneficiaries when required. However, certain plans are not or cannot be funded due to either legal, accounting, or tax requirements in certain jurisdictions. As of 31 December 2022, approximately seven percent of the Group's projected benefit obligation relates to plans that cannot be funded.

The pretax amounts recognized in *Other reserves* were as follows:

	Prior service benefit (cost)	Net actuarial gains (losses)	Total
	$m	$m	$m
At 1 January 2022	(26.3)	(559.8)	(586.1)
Current year changes recorded to Other reserves	—	0.5	0.5
Amortization reclassified to earnings	3.9	23.3	27.2
Settlements/curtailments reclassified to earnings	—	15.0	15.0
Currency translation and other	1.5	11.2	12.7
At 31 December 2022	(20.9)	(509.8)	(530.7)

Weighted-average assumptions used to determine the benefit obligation at 31 December were as follows:

	2022	2021
Discount rate:		
U.S. plans	5.51 %	2.88 %
Non-U.S. plans	4.63 %	1.74 %
Rate of compensation increase:		
U.S. plans	4.00 %	4.00 %
Non-U.S. plans	4.25 %	4.00 %

The accumulated benefit obligation for all defined benefit pension plans was $2,343.2 million and $3,311.0 million at 31 December 2022 and 2021, respectively. The projected benefit obligation, accumulated benefit obligation, and fair value of plan assets for pension plans with accumulated benefit obligations more than plan assets were $1,850.0 million, $1,847.0 million and $1,585.6 million, respectively, as of 31 December 2022, and $2,906.5 million, $2,831.5 million and $2,424.6 million, respectively, as of 31 December 2021.

Pension benefit payments are expected to be paid as follows:

	$m
2023	202.7
2024	192.9
2025	178.1
2026	180.8
2027	190.4
2028-2032	873.5

The components of the Group's net periodic pension benefit costs for the years ended 31 December include the following:

	2022 $m	2021 $m
Service cost	47.5	50.9
Interest cost	70.3	58.6
Expected return on plan assets	(103.8)	(106.2)
Net amortization of:		
Prior service costs (benefits)	3.9	5.0
Plan net actuarial (gains) losses	23.3	35.6
Net periodic pension benefit cost	41.2	43.9
Net curtailment, settlement, and special termination benefits (gains) losses	15.0	8.0
Net periodic pension benefit cost after net curtailment and settlement (gains) losses	56.2	51.9
Amounts recorded in continuing operations:		
Operating profit	43.2	47.1
Other operating expense, net	9.2	(0.9)
Amounts recorded in discontinued operations	3.8	5.7
Total	56.2	51.9

Pension benefit cost for 2023 is projected to be approximately $54 million.

Weighted-average assumptions used to determine net periodic pension cost for the years ended 31 December were as follows:

	2022	2021
Discount rate:		
U.S. plans		
Service cost	3.06 %	2.75 %
Interest cost	2.36 %	1.82 %
Non-U.S. plans		
Service cost	2.07 %	1.56 %
Interest cost	1.62 %	1.09 %
Rate of compensation increase:		
U.S. plans	4.00 %	4.00 %
Non-U.S. plans	4.00 %	4.00 %
Expected return on plan assets:		
U.S. plans	4.00 %	4.00 %
Non-U.S. plans	2.50 %	2.25 %

The expected long-term rate of return on plan assets reflects the average rate of returns expected on the funds invested or to be invested to provide for the benefits included in the projected benefit obligation. The expected long-term rate of return on plan assets is based on what is achievable given the plan’s investment policy, the types of assets held and target asset allocations. The expected long-term rate of return is determined as of the measurement date. The Group reviews each plan and its historical returns and target asset allocations to determine the appropriate expected long-term rate of return on plan assets to be used.

The Group's objective in managing its defined benefit plan assets is to ensure that all present and future benefit obligations are met as they come due. It seeks to achieve this goal while trying to mitigate volatility in plan funded status, contribution, and expense by better matching the characteristics of the plan assets to that of the plan liabilities. The Group utilizes a dynamic approach to asset allocation whereby a plan's allocation to fixed income assets increases as the plan's funded status improves. The Group monitors plan funded status and asset allocation regularly in addition to investment manager performance.

The fair values of the Group's pension plan assets at 31 December 2022 by asset category were as follows:

	Fair value measurements			Net asset value	Total fair value
	Level 1	Level 2	Level 3		
	$m	$m	$m	$m	$m
Cash at bank and in hand	3.3	50.6	—	—	53.9
Equity investments:					
Registered mutual funds – equity specialty	—	—	—	68.0	68.0
Commingled funds – equity specialty	—	—	—	244.5	244.5
	—	—	—	312.5	312.5
Fixed income investments:					
U.S. government and agency obligations	—	323.6	—	—	323.6
Corporate and non-U.S. bonds[(a)]	—	1,065.7	—	—	1,065.7
Asset-backed and mortgage-backed securities	—	12.5	—	—	12.5
Registered mutual funds – fixed income specialty	—	—	—	105.0	105.0
Commingled funds – fixed income specialty	—	—	—	61.7	61.7
Other fixed income[(b)]	—	—	29.3	—	29.3
	—	1,401.8	29.3	166.7	1,597.8
Derivatives	—	(1.5)	—	—	(1.5)
Real estate[(c)]	—	—	0.9	—	0.9
Other[(d)]	—	—	79.6	—	79.6
Total assets at fair value	3.3	1,450.9	109.8	479.2	2,043.2
Receivables and payables, net					8.4
Net assets available for benefits					2,051.6

The fair values of the Group's pension plan assets at 31 December 2021 by asset category were as follows:

	Fair value measurements			Net asset value	Total fair value
	Level 1	Level 2	Level 3		
	$m	$m	$m	$m	$m
Cash at bank and in hand	1.6	50.5	—	—	52.1
Equity investments:					
Registered mutual funds – equity specialty	—	—	—	107.5	107.5
Commingled funds – equity specialty	—	—	—	362.5	362.5
	—	—	—	470.0	470.0
Fixed income investments:					
U.S. government and agency obligations	—	551.4	—	—	551.4
Corporate and non-U.S. bonds(a)	—	1,453.6	—	—	1,453.6
Asset-backed and mortgage-backed securities	—	63.7	—	—	63.7
Registered mutual funds – fixed income specialty	—	—	—	191.4	191.4
Commingled funds – fixed income specialty	—	—	—	77.7	77.7
Other fixed income(b)	—	—	32.0	—	32.0
	—	2,068.7	32.0	269.1	2,369.8
Derivatives	—	(0.5)	—	—	(0.5)
Real estate(c)	—	—	2.1	—	2.1
Other(d)	—	—	106.1	—	106.1
Total assets at fair value	1.6	2,118.7	140.2	739.1	2,999.6
Receivables and payables, net					(5.8)
Net assets available for benefits					2,993.8

(a) This class includes state and municipal bonds.
(b) This class includes group annuity and guaranteed interest contracts.
(c) This class includes a private equity fund that invests in real estate.
(d) This investment comprises the Group's non-significant, non-US pension plan assets. It primarily includes insurance contracts.

Cash equivalents are valued using a market approach with inputs including quoted market prices for either identical or similar instruments. Fixed income securities are valued through a market approach with inputs including, but not limited to, benchmark yields, reported trades, broker quotes and issuer spreads. Commingled funds are valued at their daily net asset value (NAV) per share or the equivalent. NAV per share or the equivalent is used for fair value purposes as a practical expedient. NAVs are calculated by the investment manager or sponsor of the fund. Private real estate fund values are reported by the fund manager and are based on valuation or appraisal of the underlying investments. Refer to Note 26, "Fair Value Measurements" for additional information related to the fair value hierarchy defined by ASC 820. There have been no significant transfers between levels of the fair value hierarchy.

The Group made required and discretionary contributions to its pension plans of $90.5 million in 2022 and $55.9 million in 2021 and currently projects that it will contribute approximately $69 million to its plans worldwide in 2023. The Group's policy allows it to fund an amount, which could be in excess of or less than the pension cost expensed, subject to the limitations imposed by current tax regulations. However, the Group anticipates funding the plans in 2023 in accordance with contributions required by funding regulations or the laws of each jurisdiction.

Most of the Group's U.S. employees are covered by defined contribution plans. Employer contributions are determined based on criteria specific to the individual plans and amounted to approximately $138 million and $126 million in 2022 and 2021 respectively. The Group's contributions relating to non-U.S. defined contribution plans and other non-U.S. benefit plans were $33.8 million and $34.9 million in 2022 and 2021, respectively.

Multiemployer Pension Plans

The Group also participates in a number of multiemployer defined benefit pension plans related to collectively bargained U.S. employees of Trane. The Group's contributions, and the administration of the fixed retirement payments, are determined by the terms of the related collective-bargaining agreements. These multiemployer plans pose different risks to the Group than single-employer plans, including:

1. The Group's contributions to multiemployer plans may be used to provide benefits to all participating employees of the program, including employees of other employers.
2. In the event that another participating employer ceases contributions to a plan, the Group may be responsible for any unfunded obligations along with the remaining participating employers.
3. If the Group chooses to withdraw from any of the multiemployer plans, the Group may be required to pay a withdrawal liability, based on the underfunded status of the plan.

As of 31 December 2022, the Group does not participate in any plans that are individually significant, nor is the Group an individually significant participant to any of these plans.

Postretirement Benefits Other Than Pensions

The Group sponsors several postretirement plans that provide for healthcare benefits, and in some instances, life insurance benefits that cover certain eligible employees. These plans are unfunded and have no plan assets, but are instead funded by the Group on a pay-as-you-go basis in the form of direct benefit payments. Generally, postretirement health benefits are contributory with contributions adjusted annually. Life insurance plans for retirees are primarily noncontributory.

The following table details changes in the Group's postretirement plan benefit obligations for the years ended 31 December:

	2022	2021
	$m	$m
Benefit obligation at 1 January	342.2	389.1
Service cost	1.8	2.1
Interest cost	6.9	5.5
Plan participants' contributions	5.7	5.6
Actuarial (gains) losses (1)	(53.7)	(22.2)
Benefits paid, net of Medicare Part D subsidy (2)	(39.8)	(37.8)
Amendments	3.3	—
Other	—	(0.1)
Benefit obligations at 31 December	266.4	342.2

(1) Actuarial (gains) losses primarily resulted from changes in discount rates.

(2) Amounts are net of Medicare Part D subsidy of $0.4 million and $0.5 million in 2022 and 2021, respectively.

The benefit plan obligations are reflected in the Consolidated Balance Sheets as follows:

	2022	2021
	$m	$m
Creditors - Amounts falling due within one year	(34.2)	(33.8)
Creditors - Amounts falling due after more than one year	(232.2)	(308.4)
Total	(266.4)	(342.2)

The pre-tax amounts recognized in *Other reserves* were as follows:

	Prior service benefit (cost)	Net actuarial gains (losses)	Total
	$m	$m	$m
Balance at 1 January 2022	—	72.4	72.4
Current year changes recorded to AOCI	(3.3)	53.7	50.4
Amortization reclassified to earnings	—	(5.6)	(5.6)
Balance at 31 December 2022	(3.3)	120.5	117.2

The components of net periodic postretirement benefit (income) cost for the years ended 31 December were as follows:

	2022	2021
	$m	$m
Service cost	1.8	2.1
Interest cost	6.9	5.5
Net amortization of net actuarial (gains) losses	(5.6)	(2.0)
Net periodic postretirement benefit cost	3.1	5.6
Amounts recorded in continuing operations:		
Operating profit	1.8	2.1
Other operating expense, net	1.4	2.5
Amounts recorded in discontinued operations	(0.1)	1.0
Total	3.1	5.6

Postretirement cost for 2023 is projected to be approximately $2 million. The amount expected to be recognized in net periodic postretirement benefits cost in 2023 for net actuarial gains is approximately $13 million.

Weighted-average assumptions used to determine net periodic benefit cost for the years ended 31 December were as follows:

	2022	2021
Discount rate:		
Benefit obligations at 31 December	5.51 %	2.73 %
Net periodic benefit cost		
Service cost	2.82 %	2.40 %
Interest cost	2.33 %	1.84 %
Assumed health-care cost trend rates at December 31:		
Current year medical inflation	6.50 %	6.25 %
Ultimate inflation rate	5.00 %	4.75 %
Year that the rate reaches the ultimate trend rate	2028	2028

Benefit payments for postretirement benefits, which are net of expected plan participant contributions and Medicare Part D subsidy, are expected to be paid as follows:

	$m
2023	35.1
2024	30.0
2025	28.6
2026	27.2
2027	25.6
2028 — 2032	106.1

28. PROVISIONS FOR LIABILITIES

	2022	2021
	$m	$m
Pensions & similar obligations	787.9	971.0
Taxation including deferred taxation	683.7	585.2
Other provisions	797.0	1,031.1
	2,268.6	2,587.3

The movement on other provisions were as follows:

	Standard Warranty (a)	Extended Warranty (a)	Environmental (a)	Restructuring (b)	Insurance	Chapter 11 funding liability (a)	Other	Total
	$m	$m	$m	$m	$m	$m	$m	$m
1 January 2022	296.2	311.7	39.6	16.7	89.5	270.0	7.4	1,031.1
Arising during the year	156.6	125.1	—	11.8	24.4	—	5.1	323.0
Utilized in the year	(127.3)	(117.4)	(9.1)	(18.4)	(20.7)	(270.0)	(1.2)	(564.1)
Changes to pre-existing accruals	1.2	0.3	11.9	—	—	—	(1.2)	12.2
Currency translation	(3.1)	(2.0)	—	—	—	—	(0.1)	(5.2)
31 December 2022	323.6	317.7	42.4	10.1	93.2	—	10.0	797.0
Analyzed by:								
Current	120.4	110.5	7.2	9.0	17.8	—	10.0	274.9
Non-current	203.2	207.2	35.2	1.1	75.4	—	—	522.1
31 December 2022	323.6	317.7	42.4	10.1	93.2	—	10.0	797.0

(a) See Note 29 to the Consolidated Financial Statements for additional information of these provisions.

(b) Restructuring amounts recognized during the year ended 31 December 2022 primarily relate to severance and exit costs.

29. COMMITMENTS AND CONTINGENCIES

The Group is involved in various litigation, claims and administrative proceedings, including those related to the bankruptcy proceedings for Aldrich and Murray and environmental and product liability matters. The Group records accruals for loss contingencies when it is both probable that a liability will be incurred and the amount of the loss can be reasonably estimated. Amounts recorded for identified contingent liabilities are estimates, which are reviewed periodically and adjusted to reflect additional information when it becomes available. Subject to the uncertainties inherent in estimating future costs for contingent liabilities, except as expressly set forth in this note, management believes that any liability which may result from these legal matters would not have a material adverse effect on the financial condition, results of operations, liquidity or cash flows of the Group.

Asbestos-Related Matters

Certain wholly-owned subsidiaries and former companies of the Group have been named as defendants in asbestos-related lawsuits in state and federal courts. In virtually all of the suits, a large number of other companies have also been named as defendants. The vast majority of those claims were filed against predecessors of Aldrich and Murray and generally allege injury caused by exposure to asbestos contained in certain historical products sold by predecessors of Aldrich or Murray, primarily pumps, boilers and railroad brake shoes. None of the Group's existing or previously-owned businesses were a producer or manufacturer of asbestos.

On 18 June 2020, Aldrich and Murray filed voluntary petitions for relief under Chapter 11 of the Bankruptcy Code to resolve equitably and permanently all current and future asbestos related claims in a manner beneficial to claimants and to Aldrich and Murray. As a result of the Chapter 11 filings, all asbestos-related lawsuits against Aldrich and Murray have been stayed due to the imposition of a statutory automatic stay applicable in Chapter 11 bankruptcy cases. In addition, at the request of Aldrich and Murray, the Bankruptcy Court has entered an order temporarily staying all asbestos-related claims against the Trane Companies that relate to claims against Aldrich or Murray (except for asbestos-related claims for which the exclusive remedy is provided under workers' compensation statutes or similar laws). On August 23, 2021, the Bankruptcy Court entered its findings of facts and conclusions of law and order declaring that the automatic stay applies to certain asbestos related claims against the Trane Companies and enjoining such actions. As a result, all asbestos-related lawsuits against Aldrich, Murray and the Trane Companies remain stayed.

The goal of these Chapter 11 filings is to resolve equitably and permanently all current and future asbestos-related claims in a manner beneficial to claimants and to Aldrich, Murray and claimants through court approval of a plan of reorganization, which would establish, in accordance with section 524(g) of the Bankruptcy Code, a trust to pay asbestos claims and establish claims resolution procedures for all current and future claims against Aldrich and Murray. Aldrich and Murray intend to seek an agreement with representatives of the asbestos claimants on the terms of a plan for the establishment of such a trust.

Prior to the Petition Date, predecessors of each of Aldrich and Murray had been litigating asbestos-related claims brought against them. No such claims have been paid since the Petition Date, and it is not contemplated that any such claims will be paid until the end of the Chapter 11 cases.

From an accounting perspective, the Group no longer had control over Aldrich and Murray as of the Petition Date as their activities are subject to review and oversight by the Bankruptcy Court. Therefore, Aldrich and its wholly-owned subsidiary 200 Park and Murray and its wholly-owned subsidiary ClimateLabs were deconsolidated as of the Petition Date and their respective assets and liabilities were derecognised from the Group's Consolidated Financial Statements. Amounts derecognized primarily related to the legacy asbestos-related liabilities and asbestos-related insurance recoveries and $41.7 million of cash.

Upon deconsolidation, the Group recorded its retained interest in Aldrich and Murray at fair value within *Financial assets* in the Consolidated Balance Sheet. In determining the fair value of its equity investment, the Group used a market-adjusted multiple of earnings valuation technique. As a result, the Group recorded an aggregate equity investment of $53.6 million as of the Petition Date.

Simultaneously, the Group recognized a liability of $248.8 million within *Provision for liabilities* in the Consolidated Balance Sheet related to its obligation under the Funding Agreements. The liability was based on asbestos-related liabilities and insurance-related assets balances previously recorded by the Group prior to the Petition Date.

As a result of the deconsolidation, the Group recognized an aggregate loss of $24.9 million in its Consolidated Profit and Loss Account. A gain of $0.9 million related to Murray and its wholly-owned subsidiary ClimateLabs was recorded within *Other operating expense* and a loss of $25.8 million related to Aldrich and its wholly-owned subsidiary 200 Park was recorded within *Discontinued operations, net of taxation*. Additionally, the deconsolidation resulted in an investing cash outflow of $41.7 million in the Group's Consolidated Statements of Cash Flows, of which $10.8 million was recorded within continuing operations during the year ended 31 December 2020.

On 26 August 2021, the Group announced that Aldrich and Murray reached an agreement in principle with the court-appointed legal representative of future asbestos claimants (the FCR) in the bankruptcy proceedings. The agreement in principle includes the key terms for the permanent resolution of all current and future asbestos claims against Aldrich and Murray pursuant to a plan of reorganization (the Plan). Under the agreed terms, the Plan would create a trust pursuant to section 524(g) of the Bankruptcy Code and establish claims resolution procedures for all current and future claims against Aldrich and Murray (Asbestos Claims). On the effective date of the Plan, Aldrich and Murray would fund the trust with $545.0 million, comprised of $540.0 million in cash and a promissory note to be issued by Aldrich and Murray to the trust in the principal amount of $5.0 million, and the Asbestos Claims would be channeled to the trust for resolution in accordance with the claims resolution procedures. Following the effective date of the Plan, Aldrich and Murray would have no further obligations with respect to the Asbestos Claims. The FCR has agreed to support such Plan. The agreement in principle with the FCR is subject to final documentation and is conditioned on arrangements acceptable to Aldrich and Murray with respect to their asbestos insurance assets. It is currently contemplated that the asbestos insurance assets of Aldrich and Murray would be contributed to the trust, and that, in consideration of their cash contribution to the trust, Aldrich and Murray would have the exclusive right to pursue, collect and retain all insurance reimbursements available in connection with the resolution of Asbestos Claims by the trust. The committee representing current asbestos claimants (the ACC) is not a party to the agreement in principle. Any settlement and its implementation in a plan of reorganization is subject to the approval of the

Bankruptcy Court, and there can be no assurance that the Bankruptcy Court will approve the agreement on the terms proposed.

On 24 September 2021, Aldrich and Murray filed the Plan with the Bankruptcy Court. The Plan is supported by, and reflects the agreement in principle reached with the FCR. On the same date, in connection with the Plan, Aldrich and Murray filed a motion with the Bankruptcy Court to create a $270.0 million trust intended to constitute a "qualified settlement fund" within the meaning of the Treasury Regulations under Section 468B of the Internal Revenue Code (QSF). The funds held in the QSF would be available to provide funding for the Section 524(g) Trust upon effectiveness of the Plan.

During the year ended 31 December 2022, in connection with the agreement in principle reached by Aldrich and Murray with the FCR and the motion to create a $270.0 million QSF, the Group recorded a charge of $21.2 million to increase its Funding Agreement liability to $270.0 million. The corresponding charge was bifurcated between *Other operating expense* of $7.2 million relating to Murray and discontinued operations of $14.0 million relating to Aldrich.

On 27 January 2022, the Bankruptcy Court granted the request to fund the QSF, which was funded on 2 March 2022, resulting in an operating cash outflow of $270.0 million in the Group's Consolidated Statements of Cash Flows, of which $91.8 million was allocated to continuing operations and $178.2 million was allocated to discontinued operations for the year ended 31 December 2022. On 18 April 2022, the Bankruptcy Court entered an order granting Aldrich and Murray's request to seek to estimate their aggregate liability for all current and future asbestos-related personal injury claims. Aldrich and Murray are pursuing discovery and related matters in connection with the estimation proceedings.

On 18 October 2021, the ACC filed a motion seeking standing to pursue and investigate on behalf of the bankruptcy estates of Aldrich and Murray, claims arising from or related to the 2020 Corporate Restructuring. Also on 18 October 2021, the ACC filed a complaint seeking to substantively consolidate the bankruptcy estates of Aldrich and Murray with certain of the Group's subsidiaries. On 20 December 2021, Aldrich, Murray and certain of the Group's subsidiaries filed motions to dismiss the ACC's substantive consolidation complaint. On 14 April 2022, the Bankruptcy Court granted the ACC's standing motion and denied the motions to dismiss the substantive consolidation complaint. On 18 June, 2022, the ACC filed complaints against the Group and other related parties asserting various claims and causes of action arising from or related to the 2020 Corporate Restructuring. Additionally, the Bankruptcy Court denied motions to dismiss the ACC's substantive consolidation complaint. While the Group is vigorously opposing and defending against these claims, it is not possible to predict whether it will be successful. At this point in the Chapter 11 cases of Aldrich and Murray, it is not possible to predict whether the Bankruptcy Court will approve the terms of the Plan, what the extent of the asbestos liability will be or how long the Chapter 11 cases will last. The Chapter 11 cases remain pending as of 5 April 2023.

Furthermore, in connection with the 2020 Corporate Restructuring, Aldrich, Murray and their respective subsidiaries entered into several agreements with subsidiaries of the Group to ensure they each have access to services necessary for the effective operation of their respective businesses and access to capital to address any liquidity needs that arise as a result of working capital requirements or timing issues. In addition, the Group regularly transacts business with Aldrich and its wholly-owned subsidiary 200 Park and Murray and its wholly-owned subsidiary ClimateLabs. As of the Petition Date, these entities are considered related parties and post deconsolidation activity between the Group and them are reported as third party transactions and are reflected within the Group's Consolidated Profit and Loss Account. Since the Petition Date, there were no material transactions between the Group and these entities other than as described above.

Environmental Matters

The Group continues to be dedicated to environmental and sustainability programs to minimize the use of natural resources, reduce the utilization and generation of hazardous materials from our manufacturing processes and remediate identified environmental concerns. As to the latter, the Group is currently engaged in site investigations and remediation activities to address environmental cleanup from past operations at current and former manufacturing facilities and off-site waste disposal facilities.

It is the Group's policy to establish reserves for remediation activities when it is probable that a liability has been incurred and a reasonable estimate of the liability can be made. Estimated liabilities are determined based upon existing remediation laws and technologies. Inherent uncertainties exist in such evaluations due to unknown environmental conditions, changes in government laws and regulations, and changes in cleanup technologies. The environmental reserves are updated on a routine basis as remediation efforts progress and new information becomes available.

The Group is sometimes a party to environmental lawsuits and claims and has received notices of potential violations of environmental laws and regulations from the Environmental Protection Agency and similar state and international authorities. The Group has also been identified as a potentially responsible party (PRP) for cleanup costs associated with off-site waste disposal at federal Superfund and state remediation sites. In most instances at multi-party sites, the Group's share of the liability is not material.

In estimating its liability, the Group has assumed it will not bear the entire cost of remediation of any site to the exclusion of other PRPs who may be jointly and severally liable. The ability of other PRPs to participate has been taken into account, based on the Group's understanding of the parties' financial condition and probable contributions on a per site basis.

Reserves for environmental matters are classified as a *Provision for liabilities*. As of 31 December 2022 and 2021, the Group has recorded reserves for environmental matters of $42.4 million and $39.6 million, respectively. Of these amounts, $36.5 million and $36.3 million, respectively, relate to investigation and remediation of properties and multi-waste disposal sites related to businesses formerly owned by the Group.

Warranty Liability

Standard product warranty accruals are recorded at the time of sale and are estimated based upon product warranty terms and historical experience. The Group assesses the adequacy of its liabilities and will make adjustments as necessary based on known or anticipated warranty claims, or as new information becomes available.

The changes in the standard product warranty liability for the years ended 31 December, were as follows:

	2022	**2021**
	$m	**$m**
Balance at beginning of period	296.2	282.7
Reductions for payments	(127.3)	(119.7)
Accruals for warranties issued during the current period	156.6	133.7
Changes to accruals related to preexisting warranties	1.2	1.3
Translation	(3.1)	(1.8)
Balance at end of period	323.6	296.2

Standard product warranty liabilities are classified as a *Provision for liabilities* based on their expected term. The Group's total current standard product warranty reserve at 31 December 2022 and 31 December 2021 was $120.4 million and $106.6 million, respectively.

Warranty Deferred Revenue

The Group's extended warranty liability represents the deferred revenue associated with its extended warranty contracts and is amortized into *Turnover* on a straight-line basis over the life of the contract, unless another method is more representative of the costs incurred. The Group assesses the adequacy of its liability by evaluating the expected costs under its existing contracts to ensure these expected costs do not exceed the extended warranty liability.

The changes in the extended warranty liability for the years ended 31 December, were as follows:

	2022	**2021**
	$m	**$m**
Balance at beginning of period	311.7	304.4
Amortization of deferred revenue for the period	(117.4)	(121.5)
Additions for extended warranties issued during the period	125.1	119.4
Changes to accruals related to preexisting warranties	0.3	10.7
Translation	(2.0)	(1.3)
Balance at end of period	317.7	311.7

The extended warranty liability is classified as a *Provision for liabilities.* The Group's total current extended warranty liability at 31 December 2022 and 31 December 2021 was $110.5 million and $115.4 million, respectively. For the years ended 31 December 2022 and 2021, the Group incurred costs of $54.8 million and $58.5 million, respectively, related to extended warranties.

30. SHARE-BASED COMPENSATION

The Company accounts for share-based compensation plans under the fair-value based method. Fair value is measured once at the date of grant and is not adjusted for subsequent changes. The Company's share-based compensation plans include programs for stock options, restricted stock units (RSUs), performance share units (PSUs), and deferred compensation. Under the Company's incentive share plan, the total number of ordinary shares authorized by the shareholders is 23.0 million (2021: 23.0 million), of which 13.0 million (2021: 13.7 million) remains available as of 31 December 2022 for future incentive awards.

In connection with the completion of the Transaction, the provisions of the Company's existing share-based compensation plans required adjustment to the terms of outstanding awards in order to preserve the intrinsic value of the awards immediately before and after the separation. The outstanding awards will continue to vest over the original vesting period, which is generally three years from the grant date. At the Distribution Date, the Company incurred less than $0.1 million of incremental compensation costs related to the preservation of the share-based compensation intrinsic value post-separation.

Compensation Expense

Share-based compensation expense related to continuing operations is included in *Distribution costs and administrative expenses*. The following table summarizes the expenses recognized:

	2022	2021
	$m	$m
Stock options	14.1	16.7
RSUs	19.7	21.9
PSUs	20.7	26.1
Deferred compensation	1.2	3.0
Other [1]	—	4.4
Pre-tax expense	55.7	67.7
Tax benefit	(13.5)	(17.4)
After-tax expense	42.2	54.7
Amounts recorded in continuing operations	42.6	54.7
Amounts recorded in discontinued operations	(0.4)	—
Total	42.2	54.7

[1] Includes certain plans that have a market-based component.

Grants issued during the years ended 31 December were as follows:

	2022		2021	
	Number Granted	Weighted-average fair value per award	Number Granted	Weighted-average fair value per award
Stock options	430,496	$ 35.96	589,417	$ 29.62
RSUs	139,730	$ 165.07	153,806	$ 154.33
Performance shares [1]	195,930	$ 170.31	284,300	$ 181.84

(1) The number of performance shares represents the maximum award level.

Stock Options / RSUs

Eligible participants may receive (i) stock options, (ii) RSUs or (iii) a combination of both stock options and RSUs. The fair value of each of the Company's stock option and RSU awards is expensed on a straight-line basis over the required service period, which is generally the 3-year vesting period. However, for stock options and RSUs granted to retirement eligible employees, the Company recognizes expense for the fair value at the grant date.

The average fair value of the stock options granted is determined using the Black Scholes option pricing model. The following assumptions were used during the year ended 31 December:

	2022	2021
Dividend yield	1.60 %	1.60 %
Volatility	28.23 %	27.90 %
Risk-free rate of return	1.56 %	0.45 %
Expected life in years	4.8	4.8

A description of the significant assumptions used to estimate the fair value of the stock option awards is as follows:

- *Dividend yield* - The Company determines the dividend yield based upon the expected quarterly dividend payments as of the grant date and the current fair market value of the Company's shares.

- *Volatility* - The expected volatility is based on a weighted average of the Company's implied volatility and the most recent historical volatility of the Company's shares commensurate with the expected life.
- *Risk-free rate of return* -The Company applies a yield curve of continuous risk-free rates based upon the published US Treasury spot rates on the grant date.
- *Expected life in years* - The expected life of the Company's stock option awards represents the weighted-average of the actual period since the grant date for all exercised or canceled options and an expected period for all outstanding options.

Changes in options outstanding under the plans for the years 2022 and 2021 were as follows:

	Shares subject to option	Weighted-average exercise price	Aggregate intrinsic value (millions)	Weighted-average remaining life (years)
31 December 2020	5,719,358	$ 70.53		
Granted	589,417	150.34		
Exercised	(1,872,069)	64.74		
Cancelled	(25,706)	115.33		
31 December 2021	4,411,000	83.39		
Granted	430,496	167.93		
Exercised	(633,962)	66.06		
Cancelled	(57,050)	137.38		
Outstanding 31 December 2022	4,150,484	$ 94.06	$ 308.0	5.1
Exercisable 31 December 2022	3,031,573	$ 75.79	$ 279.9	4.2

The following table summarizes information concerning currently outstanding and exercisable options:

	Options outstanding			Options exercisable		
Range of exercise price	Number outstanding at December 31, 2022	Weighted-average remaining life (years)	Weighted-average exercise price	Number exercisable at December 31, 2022	Weighted-average remaining life (years)	Weighted-average exercise price
$ 25.01 — $ 50.00	462,274	2.2	$ 40.18	462,274	2.2	$ 40.18
$ 50.01 — $ 75.00	1,196,126	3.5	$ 65.41	1,196,126	3.5	$ 65.41
$ 75.01 — $ 100.00	753,524	4.9	$ 79.35	753,524	4.9	$ 79.35
$ 100.01 — $ 125.00	772,358	6.2	$ 105.25	445,716	6.1	$ 105.28
$ 125.01 — $ 150.00	529,584	7.1	$ 148.68	163,945	6.9	$ 148.96
$ 150.01 — $ 175.00	401,986	9.0	$ 167.14	2,277	4.8	$ 166.79
$ 175.01 — $ 200.00	34,632	8.7	$ 189.59	7,711	8.6	$ 186.90
$ 32.68 — $ 195.00	4,150,484	5.1	$ 94.06	3,031,573	4.2	$ 75.79

At 31 December 2022, there was $8.5 million of total unrecognized compensation cost from stock option arrangements granted under the plan, which is primarily related to unvested shares of non-retirement eligible employees. The aggregate intrinsic value of options exercised during the years ended 31 December 2022 and 2021 was $61.2 million and $212.6 million, respectively. Generally, stock options expire ten years from their date of grant.

The following table summarizes RSU activity for the years 2022 and 2021:

	RSUs		Weighted-average grant date fair value
Outstanding and unvested at 31 December 2020	489,522	$	87.75
Granted	153,806	$	154.33
Vested	(266,041)	$	82.18
Cancelled	(6,257)	$	115.11
Outstanding and unvested at 31 December 2021	371,030	$	118.88
Granted	139,730	$	165.07
Vested	(202,172)	$	107.29
Cancelled	(13,935)	$	136.89
Outstanding and unvested at 31 December 2022	294,653	$	147.88

At 31 December 2022, there was $13.7 million (2021: $12.5 million) of total unrecognized compensation cost from RSU arrangements granted under the plan, which is related to unvested shares of non-retirement eligible employees.

Performance Shares

The Company has a Performance Share Program (PSP) for key employees. The program provides awards in the form of PSUs based on performance against pre-established objectives. The annual target award level is expressed as a number of the Company's ordinary shares based on the fair market value of the Company's stock on the date of grant. All PSUs are settled in the form of ordinary shares.

PSU awards are earned based 50% upon a performance condition, measured by relative Cash Flow Return on Invested Capital (CROIC) to the S&P 500 Industrials Index over a 3-year performance period, and 50% upon a market condition, measured by the Company's relative total shareholder return (TSR) as compared to the TSR of the S&P 500 Industrials Index over a 3-year performance period. The fair value of the market condition is estimated using a Monte Carlo simulation model in a risk-neutral framework based upon historical volatility, risk-free rates and correlation matrix.

The following table summarizes PSU activity for the maximum number of shares that may be issued for the years 2022 and 2021:

	PSUs		Weighted-average grant date fair value
Outstanding and unvested at 31 December 2020	1,018,472	$	99.53
Granted	284,300	$	181.84
Vested	(419,088)	$	82.93
Forfeited	(81,728)	$	160.86
Outstanding and unvested at 31 December 2021	801,956	$	131.14
Granted	195,930	$	170.31
Vested	(346,540)	$	89.70
Forfeited	(42,320)	$	164.21
Outstanding and unvested at 31 December 2022	609,026	$	165.02

At 31 December 2022, there was $16.5 million (2021: $17.4 million) of total unrecognized compensation cost from PSU arrangements based on current performance, which is related to unvested shares. This compensation will be recognized over the required service period, which is generally the three-year vesting period.

Deferred Compensation

The Company allows key employees to defer a portion of their eligible compensation into a number of investment choices, including its ordinary share equivalents. Any amounts invested in ordinary share equivalents will be settled in ordinary shares of the Company at the time of distribution.

31. SHARE CAPITAL

Authorized share capital	Number in millions	$m
1,175,000,000 ordinary shares of $1 par value	1,175.0	1,175.0
10,000,000 preference shares of $0.001 par value	10.0	—
40,000 ordinary shares of €1.00 par value	—	—
At 31 December 2022 and 31 December 2021	1,185.0	1,175.0

Allotted and fully paid - presented as equity

Ordinary shares of $1.00 each	Number	$m
At 1 January 2021	263,309,250	263.3
Issued during the financial year	2,320,500	2.3
Repurchase of ordinary shares	(5,933,982)	(5.9)
At 31 December 2021	259,695,768	259.7
Issued during the financial year	1,130,854	1.1
Repurchase of ordinary shares	(7,498,359)	(7.5)
At 31 December 2022	253,328,263	253.3

During 2022, a total of 1,130,854 (2021: 2,320,500) ordinary shares, each with a nominal value of $1.00, were issued for a consideration of $163.9 million (2021: $385.2 million) under the Company's share-based payment plans.

The holders of ordinary shares are entitled to such dividends that may be declared from time to time on such shares and are entitled to attend, speak and vote at the Annual General Meeting of the Company. On return of capital on a winding up, the holder of ordinary shares is entitled to participate in a distribution of surplus assets of the Company.

There were no Euro denominated ordinary shares or U.S. dollar preference shares outstanding at 31 December 2022 or 2021.

Share repurchase program

Share repurchases are made from time to time in accordance with the Group's capital allocation strategy, subject to market conditions and regulatory requirements. In February 2021, the Group's Board of Directors authorized the repurchase of up to $2.0 billion of its ordinary shares under a share repurchase program (2021 Authorization) which began in July 2021. During the year ended 31 December 2022, the Group repurchased and cancelled $1,200.2 million (2021: $600.2 million) of its ordinary shares leaving approximately $1.4 billion remaining under the 2021 Authorization. In February 2022, the Group's Board of Directors authorized the repurchase of up to $3.0 billion of its ordinary shares under a new share repurchase program (2022 Authorization) upon completion of the 2021 Authorization.

Shares repurchased and cancelled

During the year ended 31 December 2022, the Company repurchased 7,498,359.00 ordinary shares (2021: 5,933,982), or 2.89% of the ordinary shares in issue (2021: 2.25%) at an average price of $160.07 per share (2021: $185.42). These shares with a nominal value of $7.5 million were cancelled, giving rise to a capital redemption reserve of an equivalent amount as required by Section 106 (4) (a) of the Companies Act 2014. The aggregate consideration paid was $1,200.2 million (2021: $1,100.3 million) which is reflected as a reduction in the profit and loss account within Total equity.

Treasury shares held by the Company

At 31 December 2022, the total number of treasury shares held directly by the Company was 24,495,509 (2021: 24,495,509); the nominal value of these shares was $24.5 million (2021: $24.5 million). During the year ended 31 December 2022 the Company did not acquire any treasury shares under the repurchase program. The total accumulated treasury shares acquired represent 9.7% (2021: 9.4%) of the ordinary shares in issue at 31 December 2022.

Own shares held by a subsidiary

At 31 December 2022, a subsidiary of the Company held 5,359 (2021: 5,426) ordinary shares of $1.00 each with an aggregate nominal value of $5,359 (2021: $5,426) in trust for a deferred compensation plan.

The following table summarizes the movement in treasury shares held and own shares reserve:

	Number and aggregate nominal value of shares held			Cost of shares held		
	Treasury	Trust	Total	Treasury $m	Trust $m	Total $m
At 1 January 2021	24,495,509	5,353	24,500,862	1,719.1	0.3	1,719.4
Purchase of shares held in treasury	—	—	—	—	—	—
Purchase of shares held by employee trust	—	73	73	—	—	—
Exercise of share awards	—	—	—	—	—	—
At 31 December 2021	24,495,509	5,426	24,500,935	1,719.1	0.3	1,719.4
Purchase of shares held in treasury	—	—	—	—	—	—
Purchase of shares held by employee trust	—	164	164	—	—	—
Exercise of share awards	—	(231)	(231)	—	—	—
At 31 December 2022	24,495,509	5,359	24,500,868	1,719.1	0.3	1,719.4

32. PROFIT ATTRIBUTABLE TO TRANE TECHNOLOGIES PLC

In accordance with Section 304 of the Companies Act 2014 and Section 348 of the Companies Act 2014, the Group is availing of the exemption from presenting its individual profit and loss account to the Annual General Meeting and from filing it with the Registrar of Companies. The Group's profit for the financial year determined in accordance with Irish GAAP is $1,114.4 million (2021: $774.2 million).

33. OTHER RESERVES

	Derivative Instruments	Pension and OPEB items	Currency translation reserve	Share based payment reserve	Other reserves	Total
	$m	$m	$m	$m	$m	$m
At 1 January 2021	10.8	(416.5)	(228.0)	110.3	(2.9)	(526.3)
Currency translation and other	—	—	(121.0)	—	—	(121.0)
Unrealized net gains (losses) arising during period	1.6	3.8	—	—	—	5.4
Net gains (losses) reclassified into earnings	(6.4)	—	—	—	—	(6.4)
Tax (expense) benefit	1.1	(43.5)	—	—	—	(42.4)
Prior service costs for the period	—	0.3	—	—	—	0.3
Net actuarial gains (losses) for the period	—	111.4	—	—	—	111.4
Amortization reclassified into earnings	—	38.6	—	—	—	38.6
Settlements/curtailments reclassified to earnings	—	8.0	—	—	—	8.0
Shares issued under incentive stock plans	—	—	—	(306.9)	—	(306.9)
Share-based compensation	—	—	—	66.4	—	66.4
Other	—	—	—	—	0.1	0.1
Balance at 31 December 2021	7.1	(297.9)	(349.0)	(130.2)	(2.8)	(772.8)
Currency translation and other	—	12.4	(200.8)	—	—	(188.4)
Unrealized net gains (losses) arising during period	(24.3)	—	—	—	—	(24.3)
Net gains (losses) reclassified into earnings	10.2	—	—	—	—	10.2
Tax (expense) benefit	2.5	(16.1)	—	—	—	(13.6)
Prior service costs for the period	—	(3.3)	—	—	—	(3.3)
Net actuarial gains (losses) for the period	—	54.2	—	—	—	54.2
Amortization reclassified into earnings	—	21.6	—	—	—	21.6
Settlements/curtailments reclassified to earnings	—	15.0	—	—	—	15.0
Shares issued under incentive stock plans	—	—	—	(161.3)	—	(161.3)
Share-based compensation	—	—	—	56.2	—	56.2
Other	—	—	—	—	0.1	0.1
Balance at 31 December 2022	(4.5)	(214.1)	(549.8)	(235.3)	(2.7)	(1,006.4)

A description of each reserve within equity is outlined below:

Share premium account

The share premium account comprises the excess of proceeds received in respect of share capital over the nominal value of shares issued.

Capital redemption reserve

The capital redemption reserve represents the nominal value of share capital repurchased and cancelled.

Revaluation reserve

This reserve is used to record increases in the fair value of investments in group undertakings and decreases to the extent that such decrease relates to an increase on the same asset.

Share-based payment reserve

The share-based payment reserve represents the cumulative charge of share options granted, which are not yet exercised and issued as shares.

Profit and loss account

The profit and loss account represents accumulated comprehensive income for the financial year and prior financial years plus the Irish High Court approved creation of distributable reserves through the reduction of the share premium account, plus the transfers from the revaluation reserve realized on the Security and Industrial Spin-off transactions, less share repurchases and acquisition of treasury shares less dividends paid in cash and in-kind.

The Company's share premium, capital redemption reserve, revaluation reserve and share-based payment reserves are undistributable reserves. Under Irish law, dividends and distributions cannot be made from undistributable reserves.

Dividends paid to shareholders

	2022 $m	2021 $m
First interim - paid $0.67c per Ordinary Share (2021: $0.59c)	156.7	141.0
Second interim - paid $0.67c per Ordinary Share (2021: $0.59c)	155.9	141.3
Third interim - paid $0.67c per Ordinary Share (2021: $0.59c)	154.8	140.1
Fourth interim - paid $0.67c per Ordinary Share (2021: $0.59c)	153.3	139.4
Total	620.7	561.8

Future dividends

Future dividends on our ordinary shares, if any, will be at the discretion of our Board of Directors and will depend on, among other considerations, our results of operations, cash requirements and surplus, financial condition, contractual restrictions and other factors that the Board of Directors may deem relevant, as well as our ability to pay dividends in compliance with the Irish Companies Act, 2014. Under the Irish Companies Act 2014, dividends and distributions may only be made from distributable reserves.

Distributable reserves, broadly, means the accumulated realized profits (so far as not previously distributed or capitalized) less its accumulated, realized losses (so far as not previously written off in a reduction or reorganization of its share capital) of Trane Technologies plc. In addition, no distribution or dividend may be made unless the net assets of Trane Technologies plc are equal to, or in excess of, the aggregate of Trane Technologies plc’s called up share capital plus undistributable reserves and the distribution does not reduce Trane Technologies plc's net assets below such aggregate.

34. NON-CONTROLLING INTERESTS

	2022 $m	2021 $m
At 1 January	17.2	19.4
Share of profit for the financial year	18.2	13.2
Dividends to non-controlling interests	(14.5)	(14.9)
Acquisition of non-controlling interest	(2.7)	—
Other	(1.6)	(0.5)
At 31 December	16.6	17.2

35. LOANS TO DIRECTORS

Section 307 of the Companies Act 2014 prohibits the Group from making a loan or quasi-loan to a director of the Group. The directors confirm that they are in compliance with the legislation.

36. CAPITAL EXPENDITURE COMMITMENTS

	2022 $m	2021 $m
Capital expenditure that has been authorized by the Directors but not yet been contracted	352.3	256.1

37. RELATED PARTY DISCLOSURES

The principal related party relationships requiring disclosure in the consolidated financial statements pertain to the existence of subsidiaries and associates and transactions with these entities entered into by the Group and the identification of key management personnel as addressed in greater detail below.

Subsidiaries, Joint Ventures and Associates

The consolidated financial statements include the results of operations, financial positions and cash flows of the Group and its subsidiaries, joint ventures and associates over which the Group has control or otherwise qualify for consolidation or equity accounting. A listing of the principal subsidiaries and associates is provided in Note 38. Associates not consolidated or equity accounted are included in Note 17 to the Consolidated Financial Statements.

Trading Transactions

There were no transactions requiring disclosure under Section 67 (1) of the Irish Companies Act 2014.

Compensation of Key Management Personnel of the Group

Key management personnel are the Company's executive and non-executive directors and the following is the aggregate compensation of these directors.

	2022	2021
	$m	$m
Emoluments	4.9	6.8
Gains by the directors on the exercise of share options	1.9	44.0
Benefits under long-term incentive schemes	3.0	6.2
Contributions to defined benefit retirement schemes	0.2	0.3
	10.0	57.3

38. PRINCIPAL SUBSIDIARIES, JOINT VENTURES AND ASSOCIATES

The principal subsidiaries, joint ventures and associate undertakings at 31 December 2022, all of which are included in the consolidated financial statements, are listed below:

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
200 Park, Inc.	Operating	c/o Corporation Service Company, 508 Meeting Street, West Columbia, SC 29169	100%
Airco Limited	Trading Company	1126/2 Wanich 2 Building, 30-31 Floor, New Phetchaburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand.	50.2%
Aldrich Pump LLC	Holding Company	c/o Corporation Service Company, 2626 Glenwood Avenue, Suite 550, Raleigh, NC 27608	100%
AL-KO Air Technology Equipment Sales (Tianjin) Co., Ltd.	Trading Company	No.5, West Qingdao Road, Taicang Economic Development Zone, China	100%
AL-KO Air Technology (Suzhou) Co., Ltd.	Manufacturing & Distribution	Unit 1-1-907, Financial and Trade Center North District, 6865 Asia Road, Tianjin Pilot Free Trade Zone (Dongjiang Bonded Port Area)	100%
AL-KO Luchttechniek B.V.	Operating	Dwazziewegen 24, 9301 Roden, Netherlands	100%
AL-KO Therm d.o.o.	Operating	Pot za Brdom 100, 1000 Ljubljana, Slovenia	33.33%
AL-KO THERM GMBH	Trading Company	Hauptstraße 248-250, 89343 Jettingen-Scheppach, Germany	100%
Alliance Compressors LLC	Non-Operating	c/o The Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, DE 19808	25%
Amair Limited	Manufacturing & Distribution	999/1 Mu9, Bangna-Trad KM. 19 Road, Bangchalong, Bangplee, Samutprakran	100%
Arctic Cool Chillers Limited	Operating	c/o Baker & McKenzie LLP, 181 Bay Street Suite 2100, Toronto, Ontario, Canada M5J 2T3	100%
Aro De Venezuela, C.A.	Manufacturing & Distribution	Edificio Aldemo, 6 Piso, Avenida Venezuela, El Rosal, Caracas, Venezuela	100%
Best Matic International AB	Non-Operating	Flygfältsgatan, 8 SE-128 30 Skarpnäck, Sweden	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Best Matic International Limited	Non-Operating	Sefton House, Northgate Close, Middlebrook Business Park, Bolton, BL6 6PQ, England	100%
Best Matic Vermogensverwaltungs Gmbh	Non-Operating	Max-Planck-Ring 27, 46049 Oberhausen, Germany	100%
Calmac Corp.	Trading Company	c/o Corporation Service Company, 80 State Street, Albany, NY 12207-2543	100%
Climate ETC Technology Services Private Limited	Operating	8th & 9th Floor, Tower C & D, IBC Knowledge Park, No. 4/1, Bannerghatta Main Road, Bangalore 560029 India	100%
ClimateLabs LLC	Operating	c/o Corporation Service Company, 2626 Glenwood Avenue, Suite 550, Raleigh, NC 27608	100%
Compagnie Trane Technologies SAS	Trading Company	1 rues des Amériques, Golbey, 88190, France	100%
Cool Energy Limited	Non-Operating	ICS House, Stephenson Road, Calmore Industrial Estate, Totton, Southampton, Hampshire, SO40 3SA, United Kingdom	100%
Dallah Trane For Manufacturing Air Conditioners	Trading Company	PO Box 19902, Rabigh 21445, Saudi Arabia	49%
Diasorin International B.V.	Non-Operating	Driemanssteeweg 60, Rotterdam, 3084CB, Netherlands	100%
ECOENERGIE I AL-KO SAS	Operating	Avenue Jean Monnet, ZI Sud - 30300 Beaucaire, France	29.5%
Filairco Inc.	Operating	JJM Bldg. No. 5, NAIA Road, Brgy. San Dionisio, Paranaque City, 1704 Philippines	100%
Filairco Technical Services Co., Inc.	Operating	JJM Bldg. No. 5, NAIA Road, Brgy. San Dionisio, Paranaque City, 1704 Philippines	100%
Frigoblock Gmbh	Trading Company	Weidkamp 274, Essen, 45356, Germany	100%
Frigoblock UK Limited	Non-Operating	C/O Bdo Llp 5 Temple Square, Temple Street, Liverpool, L2 5RH	100%
Hermann Trane Harrisburg Inc.	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
ICS Cool Energy (SAS)	Trading Company	Rue Des Chataignier, 77590, Chartrettes, Melun, France	100%
ICS Cool Energy AG	Trading Company	Wiesenstrasse 1a, 8865 Bilten, Switzerland	100%
ICS Cool Energy B.V.	Trading Company	Rotschotseweg 2, 5271 WX Sint-Michielsgestel, Netherlands	100%
ICS Cool Energy Gmbh	Trading Company	Steinerne Furt 76 86167 Augsburg, Germany	100%
ICS Cool Energy Investments Limited	Non-Operating	ICS House, Stephenson Road, Calmore Industrial Estate, Totton, Southampton, Hampshire, SO40 3SA, United Kingdom	100%
ICS Cool Energy Limited	Trading Company	ICS House, Stephenson Road, Calmore Industrial Estate, Totton, Southampton, Hampshire, SO40 3SA, United Kingdom	100%
ICS Group Holdings Limited	Non-Operating	ICS House, Stephenson Road, Calmore Industrial Estate, Totton, Southampton, Hampshire, SO40 3SA, United Kingdom	100%
Industrial Chill Servicing Private Ltd.	Holding Company	c/o SGG Corporate Services (Mauritius) Ltd, 33, Edith Cavell Street, Port Louis, 11324, Mauritius	100%
Ingersoll-Rand Zimbabwe (Private) Limited	Non-Operating	Central Africa House-8th Fl., Abercorn Street, Bulawayo	100%
LKV Lufttechnische Komponenten Vertriebsgesellschaft mbH Neubrandenburg	Operating	Seestraße 7a, 17033 Neubrandenburg, Germany	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Magenta Technologies, LLC	Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	49%
Mitsubishi Electric Trane HVAC US LLC	Operating	c/o The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801	50%
Murray Boiler Holdings LLC	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Murray Boiler LLC	Holding Company	c/o Corporation Service Company, 2626 Glenwood Avenue, Suite 550, Raleigh, NC 27608	100%
Nexia Intelligence LLC	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Perfect Pitch, L.P.	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	68%
PT Trane Indonesia	Operating	EightyEight@Kasablanka, 11th Floor, Unit A & H Jl. Casablanca Kav. 88, Jakarta Selatan 12870	100%
R&O Immobilien Gmbh	Holding Company	Max-Planck-Ring 27, 46049 Oberhausen, Germany	100%
Reftrans, S.A.	Manufacturing & Distribution	Calle San Jose 140-142, Apartado de Correos 97, Poligono Industrial El Pla, Sant Feliu de Llobregat, 08980 Barcelona, Spain	85%
Shaanxi Baocheng Aerotech Air-Conditioning Equipment Co., Ltd.	Manufacturing & Distribution	No. 70, Qingjang Road, Weibin District, Baoji, Shaanxi Province, China	38%
Société Trane SAS	Manufacturing & Distribution	1 rues des Amériques, Golbey, 88190, France	100%
Spanashview Unlimited Company	Non-Operating	170/175 Lakeview DriveAirside Business Park, Swords Co. Dublin Ireland	100%
Standard Compressors Inc.	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Standard Industrial Mineral Products Corp.	Non-Operating	Purok 2, Calaboso Road, Sto. Tomas, Binan, Laguna, Philippines	40%
Standard Resources and Development Corporation	Non-Operating	Unit 304, 3rd Floor, Jovan Condominium, Shaw Boulevard, Mandaluyong City, Metro Manila, Philippines	40%
Standard Trane Insurance Company	Non-Operating	c/o Corporation Service Company, 2626 Glenwood Avenue, Suite 550, Raleigh, NC 27608	100%
Standard Trane Ireland Designated Activity Company	Non-Operating	c/o Aon Risk Solutions Global Risk Consulting, 3rd Floor The Metropolitan Building, James Joyce Street, Dublin 1, Ireland	100%
Standard Trane Warranty Company	Non-Operating	c/o Corporation Service Company, 508 Meeting Street, West Columbia, SC 29169	100%
T.I. Solutions (Israel) Ltd.	Trading Company	26 Harokmim st., Azrieli center, building B, 5th floor, Holon, 5811702, Israel	100%
Tast Limited	Holding Company	942/142-3 Charn Issara Tower, Rama IV Road, Suriyawong, Bangrak, Bangkok 10500, Thailand.	48%
The Imteaz Alroaa Company for General Trade and Maintenance of Industrial Equipment Limited Liability	Non-Operating	16 - building 91, 2nd floor ALMAGHRED STREET– Dist., 306 Alley BAGHDAD Iraq	100%
Thermo King (Hong Kong) Company Limited	Non-Operating	Suite 3001, 148 Electric Road, Tin Hau, Hong Kong	100%
Thermo King (Shanghai) Co., Ltd	Operating	10 Floor NO.99, Xianxia Road ChangNing District Shanghai China	100%
Thermo King Container Temperature Control (Suzhou) Corporation Ltd.	Manufacturing & Distribution	No. 2333, west side of Pang Jin Road, Wu Jiang Economic Development Zone, Jiang Su Province, China	100%
Thermo King Container-Denmark A/S	Trading Company	c/o Prismet, Silkeborgvej 2 8000 Aarhus C, Denmar	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Thermo King LLC	Manufacturing & Distribution	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Thermo King de Puerto Rico, Inc.	Manufacturing & Distribution	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Thermo King India Private Limited	Trading Company	8th Floor, Tower D, IBC Knowledge Park, No. 4/1, Bannerghatta Main Road, Bangalore – 560029	100%
Thermo King Ireland Limited	Non-Operating	c/o BDO, Beaux Lane House Mercer Street Lower, D02 DH60 Dublin	100%
Thermo King Japan Limited	Trading Company	Honda Denki Building 5F, 5-37, Kami-Osaki 4-chome, Shinagawa-ku, Tokyo	100%
Thermo King Manufacturing S.R.O	Trading Company	č.p. 292, 280 02 Ovčáry, Czech Republic	100%
Thermo King Puerto Rico Manufactura, Inc.	Manufacturing & Distribution	The Prentice-Hall Corporation System Of Puerto Rico, Inc. C/O Fast Solutions LLC, Citi Tower 252, Ponce de Leon Avenue, Floor 20, San Juan, 00918, Puerto Rico	100%
Thermo King Rodamientos, S.L	Holding Company	C/ Casas de Miravete Nº 22B, Edificio 1B - 3ª planta, Madrid, 28031, Spain	100%
Thermo King South Africa (Pty) Ltd	Manufacturing & Distribution	Michele Ferrero Business Park, 21 Innes Road, Jet Park, 1459, Witfield South Africa	100%
Thermo King SVC, Inc.	Trading Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Thermo King Sverige AB	Trading Company	Box 145, V Gotalands Lan, Goteborg kommun, Hisings, Karra, 42502, Sweden	100%
Thermo King Enterprise Hong Kong LLC	Trading Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Thermo King Transportkoeling B.V.	Trading Company	Driemanssteeweg 60, Rotterdam, 3084CB, Netherlands	100%
TK Puerto Rico Aire, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Comercial, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Ensamblaje, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Fabricacion, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Logistica, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Operaciones Industriales, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Produccion, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Soluciones Climaticas, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TK Puerto Rico Tecnologias, Inc.	Trading Company	517 Zona Industrial Zeno Gandia, Calle B, Areibo, 00901, Puerto Rico	100%
TM Air Conditioning Sdn. Bhd.	Operating	Unit 30-01, Level 30, Tower A, Vertical Business Suite, Avenue 3, Bangsar South, No.8, Jalan Kerinchi	100%
Trane (Europe) Limited	Non-Operating	Sefton House, Northgate Close, Middlebrook Business Park, Bolton, BL6 6PQ, England	100%
Trane (Ireland) Limited	Trading Company	F7 Centrepoint Business Park, Oak Road, Dublin, 12, Ireland	100%
Trane (Schweiz) Gmbh / Trane (Suisse) S.À.R.L.	Trading Company	Industriestrasse 28, Dietikon, CH-8108, Switzerland	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Trane (Thailand) Limited	Trading Company	1126/2 Wanich 2 Building, 30-31 Floor, New Phetchaburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	100%
Trane Air Conditioning Products Limited	Non-Operating	c/o Maples and Calder, PO Box 309, Ugland House, South Church Street, George Town, Grand Cayman, KY1-1104, Cayman Islands	100%
Trane Air Conditioning Systems (China) Co. Ltd.	Manufacturing & Distribution	No.88 Suzhou Road East, Taicang, Jiangsu Province, China	100%
Trane Air Conditioning Systems And Service Co., Limited	Trading Company	Suite 3001, 148 Electric Road, Tin Hau, Hong Kong	100%
Trane Air Conditioning Technologies (Shanghai) Co., Ltd.	Trading Company	Unit 1003, 99 Xianxia Road, Changning District, Shanghai	100%
Trane Airconditioning Pte. Ltd.	Holding Company	30 Boon Lay Way, #04-01, Singapore 609957, Singapore	100%
Trane Aire Acondicionado S.L.	Trading Company	calle Casas de Miravete, número 22 B, Edificio 1B-2a planta, Madrid, Spain	100%
Trane Bermuda Ltd.	Non-Operating	c/o Conyers Corporate Services (Bermuda) Limited, Clarendon House, 2 Church Street, Hamilton HM 11, Bermuda	100%
Trane Brands, Inc.	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Buford LLC	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane BV	Trading Company	Lenneke Marelaan 6, 1932 St-Stevens-Woluwe, ON: 0477.659.177 - RPR, Bruxelles/Brussel, Belgium	100%
Trane Canada ULC	Trading Company	Fasken Martineau DuMoulin LLP 2900 - 550 Burrard Street, Vancouver, British Columbia V6C 0A3	100%
Trane Central America, Inc.	Trading Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane China Holdings Limited	Holding Company	c/o Maples and Calder, P.O. Box 309, Ugland House, South Church Street, George Town, Grand Cayman, KY1-1104, Cayman Islands	100%
Trane Climate Manufacturing S.R.L.	Manufacturing & Distribution	Via Dei Ciclamini 25, Modugno, Bari, Italy	100%
Trane CR Spol sro.	Trading Company	Thamova 183/11, 18600 Praha 8, Karlin, Czech Republic	100%
Trane Croatia d.o.o. za trgovinu	Trading Company	Zagreb, Ulica grada Vukovara 284, Croatia	100%
Trane de Argentina S.A.	Trading Company	c/o Brons & Salas Abogados, Maipú 1210, 5to Piso, Buenos Aires, C1006ACT, Argentina	100%
Trane de Chile S.A.	Manufacturing & Distribution	Calle Nueva 1820, Huechuraba, Santiago, Chile	100%
Trane de Colombia S.A.	Trading Company	Av. KR 45 #108-27, Piso 18, Bogotá, Colombia	100%
Trane Deutschland Gmbh	Trading Company	Max-Planck-Ring 27, 46049 Oberhausen, Germany	100%
Trane Distribution Pte Ltd	Operating	30 Boon Lay Way, #04-01, Singapore 609957, Singapore	100%
Trane do Brasil Indústria e Comércio de Productos para Condicionamento de Ar Ltda.	Trading Company	Rua Pinheirinho, 144, térreo, sala 01, Jabaquara, State of São Paulo, City of São Paulo, CEP 04.321, Brazil	100%
Trane Dominicana, S.R.L.	Trading Company	c/o Jorge Mera & Villegas, Calle Pablo Casals #12, Piantini, Santo Domingo, Dominican Republic	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Trane Egypt LLC	Trading Company	45 Abdel Hamid Badawi Street, Heliopolis, Cairo, Egypt	99%
Trane Energy Choice, LLC	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Europe Holdings B.V.	Holding Company	Driemanssteeweg 60, Rotterdam, 3084CB, Netherlands	100%
Trane Export LLC	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Finance SRL	Non-Operating	Lenneke Marelaan 6, 1932 St-Stevens-Woluwe, ON: 0477.659.177 - RPR, Bruxelles/Brussel, Belgium	100%
Trane France SAS	Trading Company	1 rues des Amériques, Golbey, 88190, France	100%
Trane Gmbh	Trading Company	Campus 21, Liebermannstraße F03 201, 2345 Brunn am Gebirge, Austria	100%
Trane Grid Services LLC	Operating	c/o Corporation Service Company, 421 West Main Street, Frankfort, KY 40601	100%
Trane Hellas S.A.	Trading Company	18, Erifilis str, Halandri, Athens, 15232, Greece	100%
Trane Holding Limited	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Holdings Company YK	Holding Company	Honda Denki Building 5F, 5-37, Kami-Osaki 4-chome, Shinagawa-ku, Tokyo, 141-0021 Japan	100%
Trane Hungary KFT	Trading Company	H-2040 Budaörs, Baross utca, 165 Budapest, Hungary	100%
Trane Inc.	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Inc. of Delaware	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane India Ltd.	Trading Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane International Inc.	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Investments Canada Inc.	Holding Company	Fasken Martineau DuMoulin LLP 2900 - 550 Burrard Street, Vancouver, British Columbia V6C 0A3	100%
Trane IP Inc.	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Italia S.R.L	Trading Company	Viele Europa, 30/C/2, 20090 Cusago, Milano, Italy	100%
Trane Japan, Ltd.	Trading Company	Honda Denki Building 5F, 5-37, Kami-Osaki 4-chome, Shinagawa-ku, Tokyo,	100%
Trane Klima Ticaret AS	Trading Company	Aytar Cad Metro IS Hani 10 Kat 3, F. Levent 80600, Istanbul, 80600, Turkey	100%
Trane Korea, Inc.	Trading Company	8FL Trutec Building, 12, Worldcupbuk-ro 56-gil Sangam-dong 1598, Mapo-gu, Seoul, 121-835, Korea	100%
Trane Kuwait Airconditioning Co WLL	Trading Company	P.O. Box 42039, Shuwaikh Ind. Area, 70651, Kuwait	49%
Trane Malaysia Sales & Services Sdn. Bhd.	Operating	Lot 4881, Jalan SS 13/2, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia.	100%
Trane Maroc S.A.R.L.AU	Trading Company	219 Boulevard Zerktouni, Résidence El Berdai, CASABLANCA, 20100, Morocco	100%
Trane Netherlands B.V.	Trading Company	Nieuwegracht 22, 3763 LB, Soest, Netherlands	100%
Trane Poland sp. z.o.o.	Trading Company	al. Jerozolimskie 195b, 02-222 Warszawa, Poland	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Trane Portugal	Trading Company	Alameda António Sérgio, 7 - Sala L, Distrito: Lisboa Concelho: Oeiras Freguesia: Algés, Linda-a-Velha e Cruz Quebrada-Dafundo 2795 023 Linda-a-Velha, Lisbon, Portugal	100%
Trane Puerto Rico LLC	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Qatar LLC	Trading Company	Building no. (1), (Financial Square Building) in C ring road, Al Muntazah Signal, Doha, Qatar	49%
Trane Romania S.R.L.	Trading Company	Starda Cauzasi Nr. 22B, Bloc CORP A, Sector 3, Bucuresti, Cod 030802, Romania	100%
Trane S.A.	Holding Company	c/o PHH Consulting, HEYER Route de la Belle-Croix 4, 1680 Romont FR, Switzerland	100%
Trane S.A.E.	Manufacturing & Distribution	45, Abdel Hamid, Badawi St., Heliopolis, Cairo, Egypt	100%
Trane Servicefirst, C.A.	Trading Company	Apartado Postal 62015, Caracas 1060A, Venezuela, Caracas, Venezuela	100%
Trane Services Limited	Non-Operating	Harrow House, Bessemer Road, BASINGSTOKE Hampshire, RG21 3NB, England	100%
Trane Singapore Enterprises Pte. Ltd.	Operating	31 Boon Lay Way, #04-01, Singapore 609957, Singapore	100%
Trane Sistemas Integrales, S. de R.L. De C.V.	Trading Company	Félix Guzmán 21, El Parque de los Remedios y Joselillo, Naucalpan, Mexico, CP, 53398, Mexico	100%
Trane Support SAS	Non-Operating	1 rues des Amériques, Golbey, 88190, France	100%
Trane Sweden AB	Trading Company	Flygfältsgatan 8, SE-128 30 Skarpnäck, Sweden	100%
Trane Systems Solutions of Panama, Inc.	Trading Company	Edificio Blue Business Center Oficina 5-3, Calle 67, San Francisco, Ciudad de Panama, Panama	100%
Trane Taiwan Distribution Ltd.	Trading Company	6F-1, No. 338, Wen-Lin Road, Shih Lin 111, Taipei, Taiwan Province of China	100%
Trane Technologies (China) Co., Ltd.	Operating	No. 558 fenhu Avenue, Lili Town, Wujiang District, Suzhou, PRC	100%
Trane Technologies Charitable Foundation	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Technologies Company LLC	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Technologies Costa Rica Sociedad Anonima	Trading Company	Apartado 664-1000, San Jose, Costa Rica	100%
Trane Technologies European Holding Company B.V.	Holding Company	Driemanssteeweg 60, Rotterdam, 3084CB, Netherlands	100%
Trane Technologies Financial Services Corporation	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Technologies Financing Limited	Non-Operating	170/175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin, Ireland	100%
Trane Technologies Finland Oy	Non-Operating	Metsänneidonkuja 4, 02130 ESPOO, Finland	100%
Trane Technologies Funding Ltd.	Non-Operating	c/o Ocorian Services (Bermuda) Limited, Clarendon House, 2 Church Street, Hamilton HM 11, Bermuda	100%
Trane Technologies Global Holding Company Limited	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Technologies Gmbh	Non-Operating	Max-Planck-Ring 27, 46049 Oberhausen, Germany	100%
Trane Technologies Holdco Inc.	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Trane Technologies Holdings B.V.	Holding Company	Driemanssteeweg 60, Rotterdam, 3084CB, Netherlands	100%
Trane Technologies India Private Limited	Trading Company	8th Floor, Tower D, IBC Knowledge Park, No. 4/1, Bannerghatta Main Road, Bangalore – 560029, India	100%
Trane Technologies Indústria, Comércio E Serviços de Ar-Condicionado Ltda.	Trading Company	Avenida dos Pinherais, 565, Blocos 2 e 4, Chapada, CEP 83.707-762, Araucária, PR, Brazil	100%
Trane Technologies International Finance Limited	Non-Operating	170/175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin, Ireland	100%
Trane Technologies International Limited	Trading Company	170/175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin, Ireland	100%
Trane Technologies Investments Netherlands B.V.	Holding Company	Driemanssteeweg 60, Rotterdam, 3084CB, Netherlands	100%
Trane Technologies Irish Holdings Unlimited Company	Holding Company	170/175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin, Ireland	100%
Trane Technologies Latin America B.V.	Operating	Produktieweg 10, Zoeterwoude, 2382PB, Netherlands	100%
Trane Technologies Latin America, S. de R.L. de C.V.	Operating	Av. Nafta No. 750, Suite 1 Parque Industrial STIVA Aeropuerto Apodaca, Nuevo León 66600 Mexico	100%
Trane Technologies Life Sciences LLC	Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
Trane Technologies Lux Euro III Financing s.á r.l.	Non-Operating	20, rue des Peupliers, Luxembourg L-2328 Luxembourg	100%
Trane Technologies Lux International Holding Company S.á r.l.	Non-Operating	20, rue des Peupliers, Luxembourg L-2328 Luxembourg	100%
Trane Technologies Manufactura, S. de R.L de C.V.	Manufacturing & Distribution	Avenue Nafta No. 750, Parque Industrial Stiva Aeropuerto, Apocada, Nuevo Leon, 66600, Mexico	100%
Trane Technologies Peru S.A.C.	Trading Company	Calle Los Antares N° 320, Centro Empresarial El Nuevo Trigal Torre A, Of. 908, Urbanización La Alborada, Santiago de Surco, Lima, Peru	100%
Trane Technologies Rus LLC	Trading Company	office XVIIa, floor 5, ulitsa Sergeya Makeeva 13, 123022, Moskow, Russian Federation	100%
Trane Technologies S.A.	Non-Operating	Boulevard de Perolles 55, c/o Ingersoll-Rand S.A., Fribourg, CH-1700, Switzerland	100%
Trane Technologies Sales Company, LLC	Trading Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE, 19808	100%
Trane Technologies s.r.o.	Trading Company	č.p. 292, 280 02 Ovčáry, Czech Republic	100%
Trane Thermo King (Shanghai) Enterprise Management Co., Ltd.	Operating	10 Floor NO.99, Xianxia Road ChangNing District Shanghai China	100%
Trane Thermo King Pty Ltd	Operating	Unit 28/8 Avenue of the Americas, Newington, NSW, 2127	100%
Trane UK Limited	Operating	Harrow House, Bessemer Road, BASINGSTOKE Hampshire, RG21 3NB, England	100%
Trane U.S. Inc.	Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE, 19808	100%
Trane Vietnam Services Company Limited	Operating	Unit 901-903, Centre Point Bld, 106 Nguyen Van Troi St., Ward 8, Phu Nhuan Dist., Ho Chi Minh City. Vietnam	100%
Trane, S.A. de C.V.	Manufacturing & Distribution	Félix Guzmán 21, El Parque de los Remedios y Joselillo, Naucalpan, Mexico, CP, 53398, Mexico	100%
Trane SPC	Non-Operating	PO BOX 686, Ruwi/ Muttrah/ Muscat, Post code: 112, Oman	100%

Name of Subsidiary	Nature of Business	Registered Office and Country of Incorporation	Percent of Ownership
Tricool Thermal Limited	Non-Operating	ICS House, Stephenson Road, Calmore Industrial Estate, Totton, Southampton, Hampshire, SO40 3SA, United Kingdom	100%
TSI Anstalt Ltd.	Holding Company	Staedtle 36, Vaduz, FL-9490, Liechtenstein	100%
TUI Holdings Inc.	Holding Company	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%
TwentyThreeC, LLC	Operating	c/o Corporation Service Company 251 Little Falls Drive, Wilmington, DE 19808	65%
TYS Limited	Trading Company	25F, Devon House, Taikoo Place, 979 King's Road, Quarry Bay, Hong Kong	50%
VKL Vertriebsgesellschaft für Kälte- und Lufttechnik mbH	Operating	Otto Lilienthalstraße 11, 31535 Neustadt am Rübenberge, Germany	100%
World Standard Ltd.	Non-Operating	c/o Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808	100%

39. EVENTS SINCE THE END OF THE FINANCIAL YEAR

Dividends declared

On 9 February 2023, the Board of Directors declared a quarterly cash dividend of $0.75 per ordinary share, which was paid on 31 March 2023 to shareholders of record as of 3 March 2023.

Shares repurchased and cancelled

During the quarter ended 31 March 2023, the Company repurchased and cancelled approximately $300 million of its ordinary shares thus completing the 2021 Authorization and initiating repurchases under the 2022 Authorization of $100 million of its ordinary shares leaving approximately $2.9 billion remaining under the 2022 Authorization.

Completion of $700 million Senior Notes Offering

On 3 March 2023, an indirect, wholly-owned subsidiary, Trane Technologies Financing Limited, issued $700 million aggregate principal amount of 5.250% senior notes due 2033. The notes are guaranteed by the Company, Trane Technologies Global Holding Company Limited, Trane Technologies Lux International Holding Company S.a.r.l., Trane Technologies Irish Holdings Unlimited Company, Trane Technologies Company LLC and Trane Technologies Holdco Inc., each of which is a wholly-owned subsidiary of the Company. The net proceeds from the offering were used to fund the redemption of the $700 million aggregate principal amount of the outstanding 4.250% Senior Notes due 2023 issued by Trane Technologies HoldCo Inc., which were scheduled to mature on 15 June 2023.

40. APPROVAL OF FINANCIAL STATEMENTS

The Board of Directors approved and authorized for issue the Consolidated Financial Statements in respect of the financial year ended 31 December 2022 on 5 April 2023.

Trane Technologies plc
Parent Company Balance Sheet
As at 31 December 2022

	Note	2022 $m	2021 $m
Fixed assets			
Financial assets	7	38,464.4	47,517.5
Current assets			
Debtors	8	8.3	111.1
Cash at bank and in hand		0.3	0.1
		8.6	111.2
Creditors: amounts falling due within one year	9	(1,188.4)	(709.7)
Net current liabilities		(1,179.8)	(598.5)
Total assets less current liabilities		37,284.6	46,919.0
Creditors: amounts falling due after more than one year	10	(1.4)	(1.9)
Net assets		37,283.2	46,917.1
Capital and reserves			
Called-up share capital presented as equity	11	253.3	259.7
Share premium account	11	1,724.8	1,562.0
Capital redemption reserve	11	126.4	118.9
Revaluation reserve	11	25,669.8	34,737.2
Share based payment reserve	11	305.7	329.6
Profit and loss account	11	9,203.2	9,909.7
Total equity		37,283.2	46,917.1

The Parent Company recorded a profit of $1,114.4 million for the year ended 31 December 2022 (2021: profit $774.2 million).

The accompanying notes are an integral part of the financial statements.

The financial statements were approved by the Board of Directors on 5 April 2023 and signed on its behalf by:

/s/ Myles P. Lee	/s/ John P. Surma
Myles P. Lee	John P. Surma
Director	Director

Trane Technologies plc
Parent Company Statement of Changes in Equity
For the financial year ended 31 December 2022

	Note	Called-up Share Capital Presented as Equity $m	Share Premium Account $m	Capital Redemption Reserve $m	Revaluation Reserve $m	Share Based Payment Reserve $m	Profit and Loss Account $m	Total Equity $m
Balance as at 1 January 2021		263.3	1,179.1	113.0	21,819.5	357.7	10,797.6	34,530.2
Profit for the financial year		—	—	—	—	—	774.2	774.2
Proceeds from shares issued	11	2.3	382.9	—	—	—	—	385.2
Repurchase of ordinary shares	11	(5.9)	—	5.9	—	—	(1,100.3)	(1,100.3)
Revaluation of financial assets	7	—	—	—	12,917.7	—	—	12,917.7
Net share-based payment charge	11	—	—	—	—	(28.1)	—	(28.1)
Dividends paid	11	—	—	—	—	—	(561.8)	(561.8)
Balance as at 31 December 2021		259.7	1,562.0	118.9	34,737.2	329.6	9,909.7	46,917.1
Profit for the financial year		—	—	—	—	—	1,114.4	1,114.4
Proceeds from shares issued	11	1.1	162.8	—	—	—	—	163.9
Repurchase of ordinary shares	11	(7.5)	—	7.5	—	—	(1,200.2)	(1,200.2)
Revaluation of financial assets	7	—	—	—	(9,067.4)	—	—	(9,067.4)
Net share-based payment charge	11	—	—	—	—	(23.9)	—	(23.9)
Dividends paid	11	—	—	—	—		(620.7)	(620.7)
Balance as at 31 December 2022		253.3	1,724.8	126.4	25,669.8	305.7	9,203.2	37,283.2

The accompanying notes are an integral part of the financial statements.

Trane Technologies plc
Parent Company Statement of Comprehensive Income
For the financial year ended 31 December 2022

	Note	2022 $m	2021 $m
Profit for the financial year		1,114.4	774.2
Other comprehensive income:			
Revaluation of financial assets	7	(9,067.4)	12,917.7
Total comprehensive income for the financial year		(7,953.0)	13,691.9

The accompanying notes are an integral part of the financial statements.

1. GENERAL INFORMATION

Trane Technologies plc is a public limited company incorporated under registered number 469272 in Ireland. The address of its registered office is 170-175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin.

2. STATEMENT OF COMPLIANCE

The parent financial statements have been prepared on the going concern basis and in compliance with Generally Accepted Accounting Practice in Ireland (applicable accounting standards issued by the Financial Reporting Council and the Companies Act 2014) including Financial Reporting Standard 102, 'The Financial Reporting Standard applicable in the United Kingdom and Republic of Ireland' (FRS 102).

3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The significant accounting policies used in the preparation of the financial statements are set out below. These policies have been consistently applied to all financial years presented, unless otherwise stated.

(a) Basis of preparation

The financial statements of Trane Technologies plc (the "Company") present the profit and loss account, the statement of comprehensive income, the balance sheet and the statement of changes in equity on a stand-alone basis, including related party transactions.

The financial statements have been prepared under the historical cost convention except for fixed asset investments (shares in group undertakings) that are measured on a valuation basis as explained in the accounting policies below.

The preparation of financial statements in conformity with FRS 102 requires the use of certain key assumptions concerning the future, and other key sources of estimation uncertainty at the end of the financial year. FRS 102 also requires the directors to exercise their judgement in the process of applying the Company's accounting policies. The areas involving a higher degree of judgement or areas where assumptions and estimates have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are disclosed in Note 4.

(b) Going concern

The Company meets its day-to-day working capital requirements through its bank facilities and facilities with its Group undertakings. The Company's forecasts and projections, taking account of reasonably possible changes in operating performance, show that the Company should be able to operate within the level of its current facilities. Notwithstanding the Company's net current liabilities, and after making inquiries, the directors have a reasonable expectation that the use of the going concern basis of accounting is appropriate and have not identified material uncertainties related to events or conditions that may cast significant doubt about the ability of the Company to continue as a going concern.

(c) Disclosure exemptions for qualifying entities under FRS 102

FRS 102 allows a qualifying entity certain disclosure exemptions. As a qualifying entity, the Company has availed of a number of exemptions from the disclosure requirements of FRS 102 in the preparation of the entity financial statements.

In accordance with FRS 102, the Company has availed of an exemption from the following paragraphs of FRS 102:

- Exemption from the requirements of Section 7 of FRS 102 and FRS 102 paragraph 3.17(d) to present a statement of cash flows.
- Exemption from the financial instrument disclosure requirements of Section 11 paragraphs 11.39 to 11.48A and Section 12 paragraphs 12.26 to 12.29A of FRS 102 as the equivalent disclosures are included in the consolidated financial statements of the group in which the entity is consolidated.
- Exemption from certain disclosure requirements of Section 26 of FRS 102 (paragraphs 26.18(b), 26.19 to 26.21 and 26.23, in respect of share-based payments as the share-based payment concerns its own equity instruments and its separate financial statements are presented alongside the consolidated financial statements of the group; and the equivalent disclosures are included in the consolidated financial statements of the group in which the entity is consolidated.
- Exemption from the requirement of FRS 102 paragraph 33.7 to disclose key management personnel compensation in total.

(d) Foreign currency

(i) Functional and presentation currency

The Company’s functional and presentation currency is the U.S. dollar, denominated by the symbol “$”, and unless otherwise stated the financial statements have been presented in millions.

(ii) Transactions and balances
Transactions during the period denominated in foreign currencies have been translated at the rates of exchange ruling at the dates of the transactions. Assets and liabilities denominated in foreign currencies are translated to U.S. dollars at the rates of exchange at the balance sheet date. The resulting profits or losses are dealt with in the profit and loss account.

(e) Financial assets: Investments in group undertakings in the financial statements of the Company are stated at fair value at each reporting date. The revaluation is determined by reference to the market capitalization of the Company at the close of trading of its Ordinary Shares on the New York Stock Exchange at each reporting date. A deficit on revaluation is charged to the profit and loss account to the extent that it is not covered by a surplus previously credited to the revaluation reserve.

(f) Dividend income from shares in group undertakings: Dividend income from Group undertakings is recognized in the period in which it is received.

(g) Distributions paid to equity shareholders: Dividends may only be declared and paid out of the profits available for distribution in accordance with accounting practice generally accepted in Ireland and applicable Irish company law. Any dividends, if and when declared, will be declared and paid in U.S. dollars. Dividends declared by the directors are recognized when paid.

(h) Taxation: Corporation tax is provided on taxable profits at current rates. Deferred taxation is accounted for in respect of all timing differences at tax rates enacted or substantially enacted at the balance sheet date. Timing differences arise from the inclusion of items of income and expenditure in tax computation in periods different from those in which they are included in the financial statements. A deferred tax asset is only recognized when it is more likely than not the asset will be recoverable in the foreseeable future out of suitable taxable profits from which the underlying timing differences can be recovered.

(i) Share capital presented as equity: Ordinary shares are classified as Equity. Incremental costs directly attributable to the issue of new shares or options are shown in Equity as a deduction from the proceeds.

(j) Share premium: The difference between the proceeds received on issue of shares and the nominal value of the shares is credited to the share premium account.

(k) Ordinary shares acquired under share repurchase program: Share repurchases are made from time to time in accordance with management's capital allocation strategy, subject to market conditions and regulatory requirements. The cost of shares acquired and canceled upon repurchase is accounted for as a deduction from the profit and loss reserve. In addition, an amount equal to the nominal value of any shares cancelled is included within the capital redemption reserve as required by Section 106 (4) (a) of the Companies Act 2014. The cost of shares acquired and held upon repurchase is accounted as a deduction from the profit and loss reserve and classified as treasury shares until such shares are cancelled, reissued or disposed of. No gain or loss is recognized on the purchase, sale, issue or cancellation of the treasury shares. Where treasury shares are subsequently sold or reissued, any consideration received is included in Total Equity. Where treasury shares are subsequently cancelled, the nominal value of such shares is transferred to the capital redemption reserve as required by Section 106 (4) (a) of the Companies Act 2014.

(l) Share-based payments: The Company and its subsidiaries operate equity-settled share-based compensation plans. The fair value of the employee services received in exchange for the grant of the options has been valued using the Black-Scholes option-pricing model. In accordance with Section 26 of FRS 102 'Share-based Payments', the resulting cost for the Company's employees is charged to the profit and loss account over the vesting period. The value of the charge is adjusted to reflect expected and actual levels of awards vesting. The cost for awards granted to the Company's subsidiaries' employees represents additional capital contributions by the Company to its subsidiaries. An additional investment in subsidiaries has been recorded in respect of those awards granted to the Company's subsidiaries' employees, with a corresponding increase in the Company's shareholder equity. The additional capital contribution is based on the fair value at the grant date of the awards issued, allocated over the life of the underlying grant's vesting period. Proceeds received from employees, if any, for the exercise of share-based awards are credited to share capital (nominal value) and the balance to share premium.

With effect from 1 January 2017, the Company entered into Equity Recharge Agreements with some of its U.S. subsidiaries under which they have committed to pay the Company the grant-date fair value as well as subsequent movements in fair value of those awards at the time of delivery of its shares to its employees. The portion of the equity recharge amount in excess of the nominal value of the share issued is credited to the share premium account in accordance with section 71(5) of the Companies 2014 Act with the corresponding offset to related-party debtors. In addition, the recharge has the impact of reducing the investment in subsidiaries with a corresponding offset to the Company's shareholder equity. Note 30 of the Consolidated Financial Statements provides additional details of the Group share-based compensation plans.

(m) Contingencies: The Company has guaranteed certain liabilities and credit arrangements of the group. The Company reviews the status of these guarantees at each reporting date and considers whether it is required to make a provision for payment on those guarantees based on the probability of the commitment being called.

(n) Financial Instruments: The Company has chosen to adopt Sections 11 and 12 of FRS 102 in respect of financial instruments.

(i) Financial assets
Basic financial assets, including trade and other receivables and cash and bank balances, are initially recognized at transaction price, unless the arrangement constitutes a financing transaction, where the transaction is measured at the present value of the future receipts discounted at a market rate of interest. Such assets are subsequently carried at amortized cost using the effective interest method. At the end of each reporting period, financial assets measured at amortized cost are assessed for objective evidence of impairment. If an asset is impaired the impairment loss is the difference between the carrying amount and the present value of the estimated cash flows discounted at the asset's original effective interest rate. The impairment loss is recognized in profit or loss. If there is a decrease in the impairment loss arising from an event occurring after the impairment was recognized the impairment is reversed. The reversal is such that the current carrying amount does not exceed what the carrying amount would have been had the impairment not previously been recognized. The impairment reversal is recognized in profit or loss.

Financial assets are derecognized when (a) the contractual rights to the cash flows from the asset expire or are settled, or (b) substantially all the risks and rewards of the ownership of the asset are transferred to another party or (c) control of the asset has been transferred to another party who has the practical ability to unilaterally sell the asset to an unrelated third party without imposing additional restrictions.

(ii) Financial liabilities
Basic financial liabilities, including trade and other payables, bank loans, and loans from fellow group companies, are initially recognized at transaction price, unless the arrangement constitutes a financing transaction, where the debt instrument is measured at the present value of the future receipts discounted at a market rate of interest.

Trade creditors are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Trade creditors are classified as current liabilities if payment is due within one year or less. If not, they are presented within creditors amounts falling due after more than one year.

Financial liabilities are derecognized when the liability is extinguished, that is when the contractual obligation is discharged, cancelled or expires.

(o) Employee benefits: The Company provides a range of benefits to employees, including short-term employee benefits such as annual bonus arrangements and paid holiday arrangements and post-employment benefits (in the form of defined contribution pension plans).

(i) Short-term employee benefits
Short-term employee benefits, including paid holiday arrangements and other similar non-monetary benefits, are recognized as an expense in the financial year in which employees render the related service. The Company operates an annual bonus plan for employees. An expense is recognized in the profit and loss account when the Company has a present legal or constructive obligation to make payments under the plan as a result of past events and a reliable estimate of the obligation can be made.

(ii) Post-employment benefits
The Company operates a defined contribution plan for certain employees. A defined contribution plan is a pension plan under which the Company pays fixed contributions into a separate entity and has no legal or constructive obligation to pay further contributions or to make direct benefit payments to employees if the fund does not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods. The assets of the plan are held separately from the Company in independently administered funds. The contributions to the defined contribution plan are recognized as an expense when they are due. Amounts not paid are shown in accruals in the balance sheet.

(p) Cash at bank and in hand: Cash at bank and in hand includes cash in hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less. Bank overdrafts are shown within borrowings in current liabilities. Cash at bank and in hand is initially measured at transaction price and subsequently measured at amortized cost. Bank deposits which have original maturities of more than three months are not cash at bank and in hand and are presented as current asset investments.

4. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS

In the application of the Company's accounting policies, which are described above in Note 3, the directors are required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates. The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods. There are no specific critical accounting estimates or judgements in the current year.

5. EMPLOYEES AND DIRECTORS' REMUNERATION

(i) Employees
The average number of persons employed in administration by the Company in 2022 was 4 (2021: 4).

	2022 $m	2021 $m
Wages and salaries	0.2	0.2
Social insurance costs	—	—
Other retirement benefit costs	—	—
Total	0.2	0.2

(ii) Directors (executive and non-executive)

	2022 $m	2021 $m
Emoluments	3.8	9.4
Gains by the directors on the exercise of share options	—	—
Benefits under long-term incentive schemes	0.2	0.3
Contributions to defined benefit retirement schemes	—	—
Compensation for loss of office paid by the Company and other termination payments	—	—
Total	4	9.7

The emoluments above were paid directly by the Company. Refer to Note 10 in the Consolidated Financial Statements for details of directors' remuneration paid by the Group.

6. AUDITORS REMUNERATION

Remuneration (including expenses) for the statutory audit and other services carried out for the Company by the Company's auditors is as follows:

	2022 $m	2021 $m
Audit of the entity financial statements (including expenses)	0.2	0.2
Other assurance services	—	—
Tax advisory services	—	—
Other non-audit services	—	—
	0.2	0.2

Note 8 of the Consolidated Financial Statements provides additional details of fees paid by the Group.

7. FINANCIAL FIXED ASSETS - SHARES IN GROUP UNDERTAKINGS

	2022 $m	2021 $m
At 1 January	47,517.5	34,587.4
Capital contribution relating to share-based payments	14.3	14.8
Disposal [1]	—	(2.4)
Revaluation	(9,067.4)	12,917.7
At 31 December	38,464.4	47,517.5

Historical cost of revalued assets	2022 $m	2021 $m
At cost	8,345.1	8,330.8
Revaluation	30,119.3	39,186.7
Carrying amount	38,464.4	47,517.5

[1] During the prior year as part of a wider group re-organisation, Trane Technologies Luxembourg United S.A.R.L was liquidated and the investment disposed of. This resulted in a gain in the profit and loss of $0.6 million, being the final dividend received on liquidation of $3 million less the carrying value of the investment of $2.4 million.

Subsidiaries

Details of the Company's direct subsidiaries as at 31 December 2022 are as follows:

Subsidiary Company and Registered Office	Country of Incorporation	Principal Activity	Holding %
Trane Technologies Funding Limited Canons Court, 22 Victoria Street, Hamilton, Bermuda	Bermuda	Non-Operating	100 %
Trane Technologies Irish Holdings Unlimited Company 170-175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin, Ireland	Ireland	Holding Company	100 %
Frigoblock GmbH Weidkamp 274, Essen 45356, Germany	Germany	Trading Company	10 %
R&O Immobilien GmbH Max-Planck-Ring 27, 46049 Oberhausen, Germany	Germany	Holding Company	5.1 %

Details of indirect subsidiaries can be found in Note 38 of the 2022 Consolidated Financial Statements.

8. DEBTORS

Amounts falling due within one year:	2022 $m	2021 $m
Loans advanced to a group undertaking	—	8.6
Amounts owed by group undertakings	8.0	102.3
Prepayments	0.3	0.2
At 31 December	8.3	111.1

The loans advanced to a group undertaking were unsecured and had a fixed rate of 0.005%. The interest receivable was generally settled on a semi-annual or annual basis.

Amounts owed by group undertakings are unsecured, interest free and repayable on demand**.** The directors consider that the carrying amount of debtors approximates their fair value.

9. CREDITORS –AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022 $m	2021 $m
Trade creditors	—	0.6
Income tax deducted under PAYE	0.1	0.2
Dividend withholding tax	4.8	4.3
Amounts due to group undertakings	1,181.1	665.0
Other creditors	2.4	39.6
At 31 December	1,188.4	709.7
Creditors for taxation and social welfare included in the table above:		
Income tax deducted under PAYE	0.1	0.2
Dividend withholding tax	4.8	4.3
At 31 December	4.9	4.5

The amounts due to group undertakings are unsecured and have interest rates which ranged from 0.462% to 4.908% in 2022 (2021: 0.299% to 0.499%). The interest payable on amounts due to group undertakings is generally settled on a semi-annual or annual basis.

Trade creditors are payable at various dates in the next three months in accordance with the suppliers' usual and customary credit terms. Tax amounts are payable in the timeframe set down in the relevant legislation. The directors consider that the carrying amount of trade creditors approximates to their fair value.

10. CREDITORS –AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR

	2022 $m	2021 $m
Other creditors	1.4	1.9

Amounts included in other creditors relate to dividend accruals for unvested restricted stock units (RSUs) and performance share units (PSUs) that are expected to vest and fall due between two and three years from the balance sheet date.

11. SHARE CAPITAL AND RESERVES

Authorized share capital	Number in millions	$m
1,175,000,000 ordinary shares of $1.00 par value	1,175.0	1,175.0
10,000,000 preference shares of $0.001 par value	10.0	—
40,000 ordinary shares of €1.00 par value	—	—
At 31 December 2022 and 31 December 2021	1,185.0	1,175.0

Allotted and fully paid - presented as equity

Ordinary shares of $1.00 each	Number	$m
At 1 January 2021	263,309,250	263.3
Issued during the financial year	2,320,500	2.3
Repurchase of ordinary shares	(5,933,982)	(5.9)
At 31 December 2021	259,695,768	259.7
Issued during the financial year	1,130,854	1.1
Repurchase of ordinary shares	(7,498,359)	(7.5)
At 31 December 2022	253,328,263	253.3

During 2022, a total of 1,130,854 (2021: 2,320,500) ordinary shares, each with a nominal value of $1.00, were issued for a consideration of $163.9 million (2021: $385.2 million) under the Company's share-based payment plans.

The holders of ordinary shares are entitled to such dividends that may be declared from time to time on such shares and are entitled to attend, speak and vote at the Annual General Meeting of the Company. On return of capital on a winding up, the holder of ordinary shares is entitled to participate in a distribution of surplus assets of the Company.

There were no Euro denominated ordinary shares or U.S. dollar preference shares outstanding at 31 December 2022 or 2021.

Share repurchase program

Share repurchases are made from time to time in accordance with the Company's capital allocation strategy, subject to market conditions and regulatory requirements. In February 2021, the Company's Board of Directors authorized the repurchase of up to $2.0 billion of our ordinary shares under a share repurchase program (2021 Authorization) which began in July 2021. During the year ended 31 December 2022, the Company repurchased and cancelled $1,200.2 million (2021: $600.2 million) of our ordinary shares leaving approximately $200 million remaining under the 2021 Authorization. In February 2022, the Company's Board of Directors authorized the repurchase of up to $3.0 billion of our ordinary shares under a new share repurchase program (2022 Authorization) upon completion of the 2021 Authorization.

Shares repurchased and cancelled

During the year ended 31 December 2022, the Company repurchased 7,498,359 ordinary shares (2021: 5,933,982), or 2.89% of the ordinary shares in issue (2021: 2.25%) at an average price of 160.07 per share (2021: $185.42). These shares with a nominal value of $7.5 million were cancelled, giving rise to a capital redemption reserve of an equivalent amount as required by Section 106 (4) (a) of the Companies Act 2014. The aggregate consideration paid was $1,200.2 million (2021: $1,100.3 million) which is reflected as a reduction in the profit and loss account within Total equity.

Treasury shares held by the Company

At 31 December 2022, the total number of treasury shares held directly by the Company was 24,495,509 (2021: 24,495,509); the nominal value of these shares was $24.5 million (2021: $24.5 million). During the year ended 31 December 2022 the Company did not acquire any treasury shares under the repurchase program. The total accumulated treasury shares acquired represent 9.7% (2021: 9.4%) of the ordinary shares in issue at 31 December 2022.

Own shares held by a subsidiary

At 31 December 2022, a subsidiary of the Company held 5,359 (2021: 5,426) ordinary shares of $1.00 each with an aggregate nominal value of $5,359 (2021: $5,426) in trust for a deferred compensation plan.
The following table summarizes the movement in treasury shares held and own shares reserve:

	Number and aggregate nominal value of shares held			Cost of shares held		
	Treasury	**Trust**	**Total**	**Treasury $m**	**Trust $m**	**Total $m**
At 1 January 2021	24,495,509	5,353	24,500,862	1,719.1	0.3	1,719.4
Purchase of shares held in treasury	—	—	—	—	—	—
Purchase of shares held by employee trust	—	73	73	—	—	—
Exercise of share awards	—	—	—	—	—	—
At 31 December 2021	24,495,509	5,426	24,500,935	1,719.1	0.3	1,719.4
Purchase of shares held in treasury	—	—	—	—	—	—
Purchase of shares held by employee trust	—	164	164	—	—	—
Exercise of share awards	—	(231)	(231)	—	—	—
At 31 December 2022	24,495,509	5,359	24,500,868	1,719.1	0.3	1,719.4

The Company’s reserves consisted of the following:

Share premium account

The share premium account comprises the excess of proceeds received in respect of share capital over the nominal value of shares issued.

Capital redemption reserve

The capital redemption reserve represents the nominal value of share capital repurchased and cancelled. At 31 December 2022 the reserve balance stands at $126.4 million (2021: $118.9 million).

Revaluation reserve

This reserve is used to record increases in the fair value of investments in group undertakings and decreases to the extent that such decrease relates to an increase on the same asset. At 31 December 2022 the reserve balance stands at $25,669.8 million (2021: $34,737.2 million).

Share-based payment reserve

The share-based payment reserve represents the cumulative charge of share options granted, which are not yet exercised and issued as shares, net of amounts recharged to subsidiaries. The share-based compensation charge, net of amounts recharged to subsidiaries during the financial year 2022 was $23.9 million (2021: $28.1 million).

Profit and loss account

The profit and loss account represents accumulated comprehensive income for the financial year and prior financial years plus the Irish High Court approved creation of distributable reserves through the reduction of the share premium account, plus the transfers from the revaluation reserve realized on the Security and Industrial Spin-off transactions, less share repurchases and acquisition of treasury shares less dividends paid in cash and in-kind.

The Company's share premium, capital redemption reserve, revaluation reserve and share-based payment reserves are undistributable reserves. Under Irish law, dividends and distributions cannot be made from undistributable reserves.

Dividends paid to shareholders

	2022 $m	2021 $m
First interim - paid $0.67c per Ordinary Share (2021: $0.59c)	156.7	141.0
Second interim - paid $0.67c per Ordinary Share (2021: $0.59c)	155.9	141.3
Third interim - paid $0.67c per Ordinary Share (2021: $0.59c)	154.8	140.1
Fourth interim - paid $0.67c per Ordinary Share (2021: $0.59c)	153.3	139.4
Total	620.7	561.8

Future dividends

Future dividends on our ordinary shares, if any, will be at the discretion of our Board of Directors and will depend on, among other considerations, our results of operations, cash requirements and surplus, financial condition, contractual restrictions and other factors that the Board of Directors may deem relevant, as well as our ability to pay dividends in compliance with the Irish Companies Act, 2014. Under the Irish Companies Act 2014, dividends and distributions may only be made from distributable reserves.

Distributable reserves, broadly, means the accumulated realized profits (so far as not previously distributed or capitalized) less its accumulated, realized losses (so far as not previously written off in a reduction or reorganization of its share capital) of Trane Technologies plc. In addition, no distribution or dividend may be made unless the net assets of Trane Technologies plc are equal to, or in excess of, the aggregate of Trane Technologies plc's called up share capital plus undistributable reserves and the distribution does not reduce Trane Technologies plc's net assets below such aggregate.

12. FINANCIAL INSTRUMENTS

The Company does not undertake hedging activities on behalf of itself or any other companies within the Group. Financial instruments in the Company primarily take the form of loans to group undertakings.

13. CONTINGENCIES

Guarantees

To help secure cost effective finance facilities for its group undertakings, the Company has given cross party guarantees to some of its finance providers. At 31 December 2022 guarantees totaling $2.0 million (2021: $1.6 million) were in place in support of such facilities. The Company treats these guarantee contracts as contingent liabilities until such time as it becomes probable that a payment will be required under such guarantees.

Section 357 Guarantees

Pursuant to the provisions of Section 357(1)(b) of the Companies Act, 2014, the Company has guaranteed all commitments entered into, including amounts shown as liabilities (within the meaning of Section 357 of the Companies Act, 2014), by certain wholly-owned subsidiary undertakings in the Republic of Ireland for the financial year ended 31 December 2022 and has met the other conditions set out in Section 357 and, as a result, the following subsidiary undertakings; Trane

Technologies Irish Holdings Unlimited Company, and Trane Technologies International Limited have been exempted from the filing provisions of Sections 347 and 348 of the Companies Act, 2014.

14. RELATED PARTY TRANSACTIONS

The Company has not disclosed any other related party transactions as it has availed of the exemption available under the provisions of FRS 102 Section 33.1A "Related Party Disclosures" which exempts disclosure of transactions entered into between two or more members of a group, provided that any subsidiary which is a party to the transaction is wholly owned by a member of that group.

15. EVENTS SINCE THE END OF THE FINANCIAL YEAR

Dividends declared

On 9 February 2023, the Board of Directors declared a quarterly cash dividend of $0.75 per ordinary share, which was paid on 31 March 2023 to shareholders of record as of 3 March 2023.

Shares repurchased and cancelled

During the quarter ended 31 March 2023, the Company repurchased and cancelled approximately $300 million of its ordinary shares thus completing the 2021 Authorization and initiating repurchases under the 2022 Authorization of $100 million of its ordinary shares leaving approximately $2.9 billion remaining under the 2022 Authorization.

16. APPROVAL OF FINANCIAL STATEMENTS

The Board of Directors approved and authorized for issue the Company Financial Statements in respect of the financial year ended 31 December 2022 on 5 April 2023.