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2021  
Full Year  
Sustainability  
Report

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# Foreword

THE COVID-19 ERA HAS BROUGHT THE NEED FOR A SUSTAINABLE FUTURE INTO FOCUS. AS A PURPOSE LED ORGANISATION, WE STRIVE TO LEAVE A LASTING, POSITIVE IMPACT ON THE WORLD.

In 2021, we've focused on driving our sustainability agenda further into our organisation.

We understand that engaging and inspiring our people to create local initiatives will better enable us to reach our goals. This year our people have found ways to:

- Reduce their environmental impact
- Support their local communities
- Support the wellbeing of their colleagues

We are proud of the contribution Morgan is making and the contribution of our people to creating a more sustainable world.

For us, sustainability is fundamental to our purpose and our strategy, and underpinning of our sustainability approach is our materiality assessment.

**Our first assessment enabled us to better understand our responsibilities and led to the creation of our environmental, social and governance (ESG) commitments. We have subsequently refined our materiality assessment and this report highlights the progress we are making as a result.**



**Pete Raby**  
CEO

In 2021, we've focused on driving our sustainability agenda further into our organisation

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# Our path to 2030

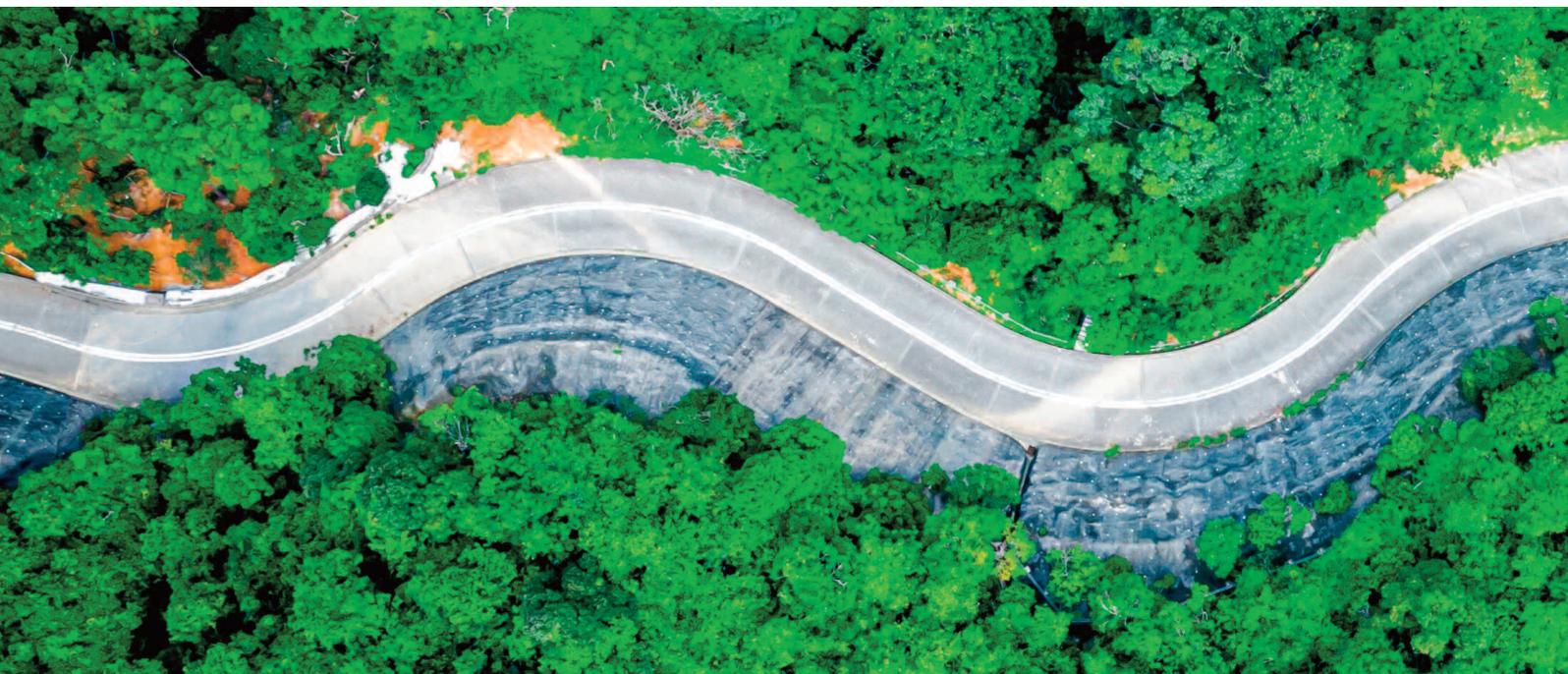
WE TAKE OUR ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) COMMITMENTS SERIOUSLY. WE HAVE PLANS IN PLACE TO DELIVER AGAINST THEM AND TO MAKE A STEP CHANGE IN OUR PERFORMANCE.

In March 2021, we set stretching targets to improve our performance and become a more sustainable business.

As a result, we are investing in our manufacturing processes and technology to reduce the environmental impact of our business. We are also investing in new materials and process technologies to improve the performance of our products, and to deliver greater environmental and safety benefits to our customers.

**We now routinely monitor ESG risks against the changing business landscape, along with stakeholder feedback, and continue to work to position our business for sustainable growth.**

Morgan's Executive Committee, working with the Board, has reviewed and approved our sustainability strategy to 2030 that includes a set of environmental and social goals. In addition, our internal global stakeholders have been tasked with aligning their business direction with our sustainability goals. These groups also identify the metrics to track performance that aligns with best practices.



## ESG commitments

### PROTECT THE ENVIRONMENT



**6**  
CLEAN WATER AND SANITATION  


**12**  
RESPONSIBLE CONSUMPTION AND PRODUCTION  


**13**  
CLIMATE ACTION  


### Our aspiration

- A CO<sub>2</sub>e net zero business by 2050<sup>1</sup>
- Use water sustainably across our business

<sup>1</sup> Excludes indirect emissions generated by our supply chain, distribution network and employee travel

### Our 2030 goals<sup>2</sup>

- 30% reduction in water use in high and extremely high stress areas
- 30% reduction in total water usage

<sup>2</sup> Reduction targets shown are compared to a 2015 baseline

### PROVIDE A SAFE, FAIR AND INCLUSIVE WORKPLACE



**3**  
GOOD HEALTH AND WELL-BEING  


**5**  
GENDER EQUALITY  


**8**  
DECENT WORK AND ECONOMIC GROWTH  


### Our aspiration

- Zero harm to our employees
- A workforce reflective of the communities in which we operate
- A welcoming and inclusive environment where employees can grow and thrive

### Our 2030 goals

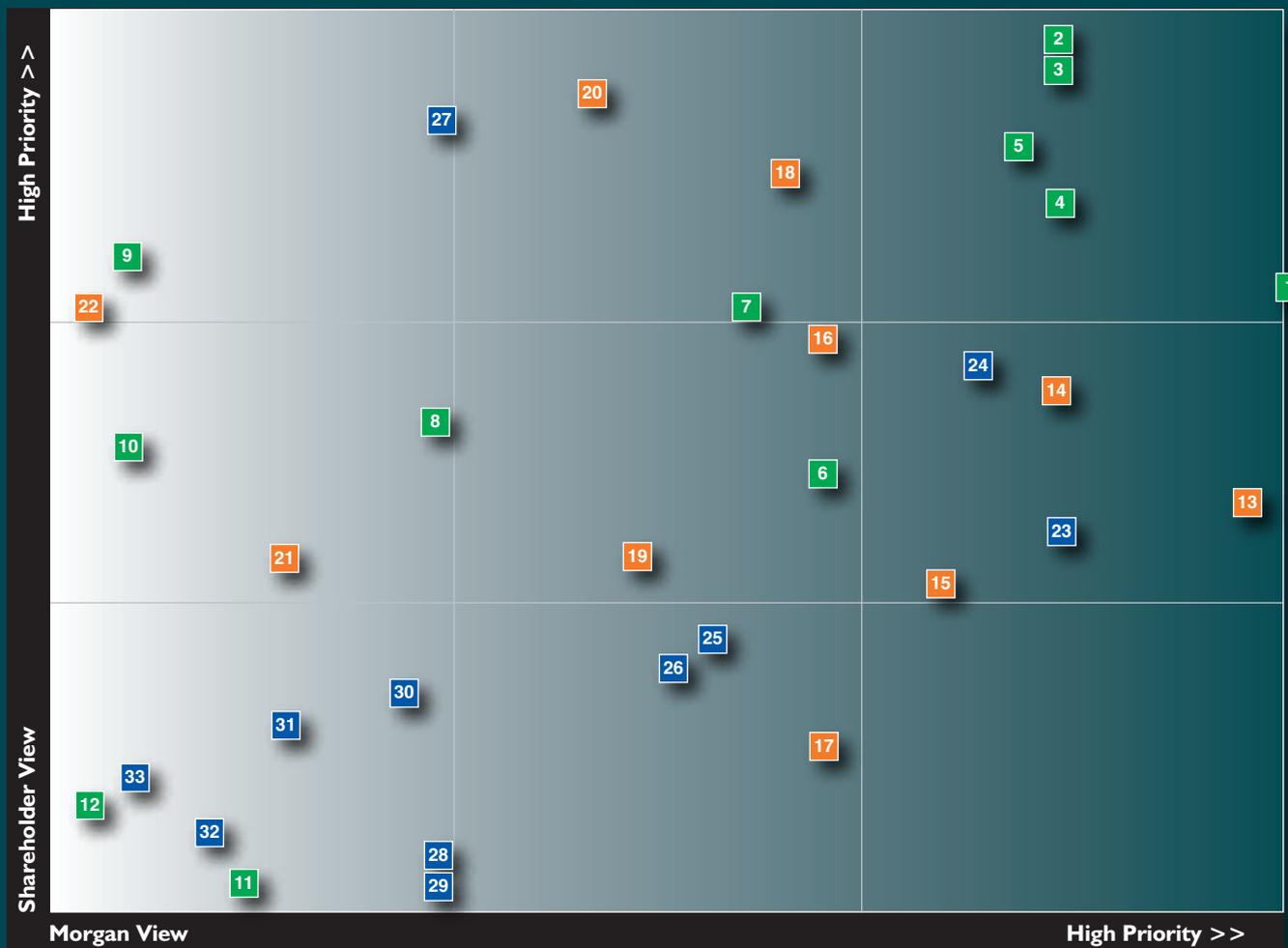
- 0.10 lost time accident rate (per 100,000 hours worked)
- 40% of our leadership population will be female
- Top quartile engagement score



## Materiality assessment and matrix

In 2021 we refined our materiality assessment to identify the ESG topics that impact our business and that are of interest to our external stakeholders. We utilised Datamaran's platform, as part of the assessment, to obtain input from 160 of our senior leaders and combined this with publicly available external data.

This data included insights from investors, information from direct competitors, data from the engineering sector as a whole, and from global industrial sources. These findings are reflected in the materiality matrix below. This refreshed materiality assessment represents a snapshot in time aligned with our 2021 reporting boundaries. We share our perspectives on these important issues throughout this report.



Potential impact according to Morgan's Senior Leaders and Executive Team

### Environment

- 1 Water & wastewater management
- 2 GHG emissions
- 3 Climate change risks & management
- 4 Transition to renewables & alternative energies
- 5 Energy management
- 6 Sourcing efficiency & management
- 7 Waste & hazardous waste management
- 8 Product design & lifecycle management
- 9 Air emissions
- 10 Natural capital
- 11 Management of local impacts
- 12 Ecological impacts

### Social

- 13 Workforce management
- 14 Employee diversity & inclusion
- 15 Community relations
- 16 Human rights
- 17 Labor practices
- 18 Employee Health & Safety
- 19 Physical & sociopolitical risks
- 20 Public health risks
- 21 Access & affordability
- 22 Customer privacy & data security

### Governance

- 23 Governance structures & mechanisms
- 24 Ethical corporate behaviour
- 25 Business model resilience
- 26 Transparency
- 27 Product & service safety & quality
- 28 Competitive behaviour
- 29 Selling practices & product labelling
- 30 Innovation & technology
- 31 Customer practices
- 32 Responsible consumption & production
- 33 Management of legal & regulatory environment

## Independent assurance

Morgan asked ERM Certification and Verification Services Limited (ERM CVS) to provide limited assurance of the following data for the 2021 reporting year:

- Total Scope 1 GHG emissions [tCO<sub>2</sub>e]
- Total Scope 2 GHG emissions [tCO<sub>2</sub>e]
- Energy use [GWh]
- Net water consumption [m<sup>3</sup>]
- Total waste generated [metric tonnes]
- Waste recycled [metric tonnes]



The assurance methodology is aligned to the International Standard for Assurance Engagements (ISAE) 3000 (Revised). ERM CVS' full Assurance Statement, including their Assurance Conclusions and summary of the assurance activities performed is available in the appendix.

## Science Based Target Initiative (SBTi)

The Science Based Targets initiative (SBTi) is a global body helping businesses to set ambitious emissions reductions targets in line with the latest climate science. It is focused on halving global emissions before 2030 and in achieving net-zero emissions before 2050.

The initiative is a collaboration between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) and is one of the We Mean Business Coalition commitments. The SBTi defines and promotes best practice in science-based target setting, offers resources and guidance to reduce barriers to adoption, and independently assesses and approves companies' targets.

We understand the importance of rapid and deep emission cuts to halve global emissions before 2030, and achieve net-zero before 2050. Therefore, in December 2021, Morgan Advanced Materials submitted our commitment to set near-term company-wide emission reductions in line with climate science highlighted by the SBTi.

SBTi encourages companies to demonstrate climate leadership through public commitments of GHG reductions to science based targets.

Due to the nature of our business we support our customers on their low carbon journey. We are also taking the necessary steps to ensure that our manufacturing operations reduce emissions and their overall impact on the environment.

## Task Force on Climate-related Financial Disclosures (TCFD)

We recognise climate change as both a risk and an opportunity for our business, and we fully support the implementation of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Climate change poses challenges to our supply chain and production operations, as well as to our employees and customers.

We have set out a commitment to align with full TCFD reporting in 2022 and intend to develop and improve these disclosures as we build a deeper understanding of the potential effects on our business. Our TCFD disclosure can be found in the appendix of this document.

By the nature of our  
business products, we  
support our customers on  
their low carbon journey

# Our performance at a glance

AS OUR PLANET CONTINUES TO BE IMPACTED BY THE EFFECTS OF CLIMATE CHANGE AND POPULATION GROWTH, IT IS UP TO INDIVIDUALS AND BUSINESSES TO TAKE RESPONSIBILITY AND ADDRESS THE ISSUE.

At Morgan lowering carbon emissions and conserving water, overall and in water stressed areas, are our priorities to ensure sustainable growth.

## Our progress

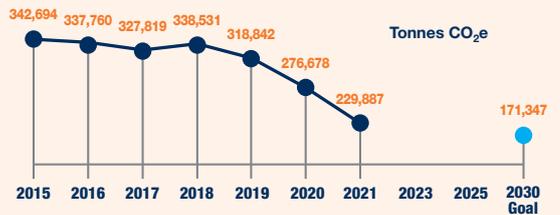
As of the end of 2021, we have successfully decreased our absolute carbon emissions by 17% as compared to 2020 (33% compared to 2015 baseline), through a combination of efficiency improvements, solar power installations and procuring additional renewable and carbon free energy. We also achieved a CO<sub>2</sub>e intensity decrease of 20% compared to 2020 and 38% compared to our 2015 baseline.

Our global manufacturing facilities are taking steps to manage water with our Kailong site commissioning a treated waste water recycling plant, that will reduce 15,000 m<sup>3</sup> of water use annually. Kailong is the third largest consumer of water in Morgan, globally.

To further reduce ground water resource demands our Gujarat site in India implemented a rainwater harvesting system. Our Stourport team have improved an automated cleaning system on their ball-mills that will save 4,000 m<sup>3</sup> annually. With the strong organic business growth in 2021 and some changes in product mix we have seen an increase of 16% in water consumption and 5% in intensity as compared to 2020. We have projects underway that will start to reduce our consumption when they complete in 2022.

By 2030 our goal is to reduce total water usage and water use in high stress areas by 30% (compared to 2015) baseline and as of the end of 2021 we have realised a 26% improvement. We have reduced water use in high stress areas by 12% compared to our 2015 baseline.

### 2030 CO<sub>2</sub>e progress



Our aspiration is to be a CO<sub>2</sub>e net zero business by 2050. Our target is to reduce our Scope 1 and Scope 2 CO<sub>2</sub>e emissions by 50% (from a 2015 baseline).

Values adjusted to remove biogenic emissions from sawdust use at Augusta, Casal and Yixing and coffee husks in Guatemala. Totals include emissions from refrigerant.

CO<sub>2</sub>e is **33%** below 2015 annual levels.

### 2030 Water stress progress



Our aspiration is to use water sustainably across our business.

Our 2030 target is to reduce our water usage in high stress areas by 30% (from a 2015 baseline).

2021 water use in stressed areas is **12%** below 2015 annual levels.

We are making good progress however, an increase in 2021 levels is due to business growth, after production was impacted by the COVID-19 pandemic.

### 2030 Water progress



Our aspiration is to use water sustainably across our business. Our 2030 target is to reduce our overall water usage by 30% (from a 2015 baseline).

2021 water use is **26%** below 2015 annual levels.

We are making good progress, however an increase in 2021 levels is due to business ramp-up after decline during the COVID-19 pandemic.

Our teams are taking steps to better conserve vital resources

Environmental Highlights	2021 Performance (Absolute)	2021 Performance (Intensity per £m revenue)
Greenhouse Gas Emissions (GHG) Scope 1 (non-process related emissions) <sup>1</sup>	118,747 mt CO <sub>2</sub> e	177 mt CO <sub>2</sub> e
Scope 2 market-based <sup>2</sup>	107,070 mt CO <sub>2</sub> e	106 mt CO <sub>2</sub> e
Scope 1 (process emissions) <sup>6</sup>	4,070 mt CO <sub>2</sub> e	4 mt CO <sub>2</sub> e
Total GHG emissions	229,887 mt CO <sub>2</sub> e	227 mt CO <sub>2</sub> e
Total energy consumed (fuel and electricity)	1,067 mt CO <sub>2</sub> e	1.06 mt CO <sub>2</sub> e
Standard electricity <sup>3</sup>	278 GWh	0.275 MWh
Renewable and clean energy used (fuel and electricity)	140 GWh	0.138 MWh
Fuel used - natural gas/oil/diesel/LPG	647 GWh	0.641 MWh
Renewable power generated	1.30 GWh	0.001 MWh
Water withdrawals/used	1,731,175 m <sup>3</sup>	1,821 m <sup>3</sup>
Water discharged <sup>4</sup>	1,215,729 m <sup>3</sup>	1,279 m <sup>3</sup>
Net consumption	515,446 m <sup>3</sup>	542 m <sup>3</sup>
Total waste	39,918 mt	42 mt
Waste sent to landfill	14,176 mt	14.9 mt
Hazardous waste to disposal	2,153 mt	2.27 mt
Waste recycled <sup>5</sup>	21,547 mt	22.7 mt
Recycling % total waste	54	N/A
ISO 14001:2015-certified sites	33	N/A

<sup>1</sup> Scope 1 includes "direct emissions," which come from sources owned or controlled by the company, such as the combustion of fuel at each site to generate heat or energy.

<sup>2</sup> Scope 2 encompasses "indirect emissions" (the result of company activities occurring at sources owned or controlled by another company) associated with the production of purchased electricity. Scope 2 emissions physically occur at the facility where electricity is generated. Scope 2 reported includes Market-based and location-based factors. Value for Scope 2 GHG location-based only emissions are 124,868 tonnes.

<sup>3</sup> Represents purchased standard grid electricity.

<sup>4</sup> Morgan returns more than 59% of the water it withdraws. The balance remains within products or evaporates during the manufacturing process.

<sup>5</sup> Includes waste used beneficially.

<sup>6</sup> Process emissions disclosed in 2021 rely on historical calculations that could not be evidenced for assurance purposes.

Social Highlights	2021 Performance
Lost time accident <sup>1</sup>	37
Lost time accident rate <sup>2</sup>	0.22
Severity rate <sup>3</sup>	31.1
Fatalities - employees	0
Fatalities - contractors	0
Fatalities - total	0
Safety observations closure rate (%)	94
Total - employees	7,717
ISO 45001-certified sites	14
Women in workforce	25%
Women in management roles	29%
Women in board director roles	43%

<sup>1</sup> The lost-time accident (LTA) is defined as an accident or work-related illness which results in one or more days of lost time.

<sup>2</sup> Defined as total number of lost-time accidents in the year, multiplied by 100,000 hours worked, divided by total number of hours worked.

<sup>3</sup> The severity rate is calculated by adding the number of workdays lost to the number of restricted workdays due to injury, multiplied by 100,000 hours worked, divided by total number of hours worked.



## Energy and climate change

According to the United Nations Intergovernmental Panel on Climate Change (UN IPCC), climate change is causing global temperatures to rise, resulting in rising sea levels, and an increase in extreme weather events. The principal cause of global warming is the rise in man-made greenhouse gas (GHG) emissions.

Our sustainability strategy includes actions to reduce GHG emissions and combat climate change. As public concern grows, more customers are asking about our GHG emissions as part of the manufacturing process. The increasing demand for low-carbon products and processes, and the need to consider the effects of climate change in general, have had an impact on our long-term strategy. In March 2021, we announced a commitment to reduce absolute GHG emissions (Scope 1 and 2) by 50% (against 2015 levels) by 2030.

As a leading innovator of products that reduce our customers GHG emissions, our focus in 2021 has been on improving our own energy efficiency. We have focused on procuring renewable and clean energy sources, and evaluating the replacement of higher-emission fuels with less-carbon-intensive fuels. We have made significant progress in improving energy procurement, with a move towards carbon free and renewable energy sources. An additional 27% of our electricity is now procured from these energy sources.

By the end of 2021, we had lowered GHG emissions by 33% against 2015 levels and reduced 17% compared to 2020, and GHG emission intensity by 38%.

### Thermal Ceramics operations in Ranipet, India

In an effort to reduce energy by 10% across their manufacturing process, the operations and engineering team targeted energy improvements for their annealing ovens. Generally, this process is a high fuel consumer for the manufacture of Superwool Plus and other refractory ceramic fibers (RCF). They focused primarily on heat retention and burner tuning within the ovens and were successful in reducing the specific energy consumption per kilogram of product for RCF by 25%, and for Superwool® Plus by 29%.

## Scope 3 emissions

Morgan Advanced Materials recognises that assessment of our value-chain emissions is an important part of our long-term sustainability strategy. We aim to work with our key stakeholders and top tier suppliers to reduce indirect emissions and this is our preliminary step towards minimising product lifecycle impact.

For GHG reporting purposes, Morgan outlines its organisational boundary on an operational control basis, and our Scope 1 and 2 emissions are reported on this basis (i.e. we account for 100 per cent of such emissions from operations over which Morgan or one of its subsidiaries has operational control). Generally, 'Scope 3' is the term used for the indirect GHG emissions resulting from activities in our value chain. Examples include upstream emissions related to raw materials, downstream emissions generated from the products we sell, and emissions from both upstream and downstream generated through

transportation activities. The Scope 3 Standard further sorts these emissions into fifteen distinct categories. Based on our priorities we are focusing on a few key categories linked to upstream and downstream.

We are actively evaluating the following areas:

- Supplier goods and services. We identified a system to evaluate our suppliers in 2021 and conducted a pilot on our top tier suppliers in terms of climate and other environmental, social and governance (ESG) criteria. Our next steps will be to calculate the impact for the priority categories and evaluate whether the remaining categories are relevant.
- Capital Goods. We anticipate having a system identified in 2022 to begin our evaluation of Scope 3 emissions associated with capital goods. This will use a life cycle analysis (LCA) based method. Systems to conduct LCAs were evaluated and a LCA platform was selected in 2021.
- Fuel-and-energy-related activities. We are currently evaluating adequate systems to accurately account for Scope 3 for Fuel-and-energy-related activities (not included in Scope 1 or 2). We anticipate having a plan defined in 2022 to capture this data. Scope 3 emissions associated with fuel-and-energy-related activities both upstream and downstream will be assessed using various tools such as the GHG Protocol Scope 3 Evaluator and IEA emissions data.

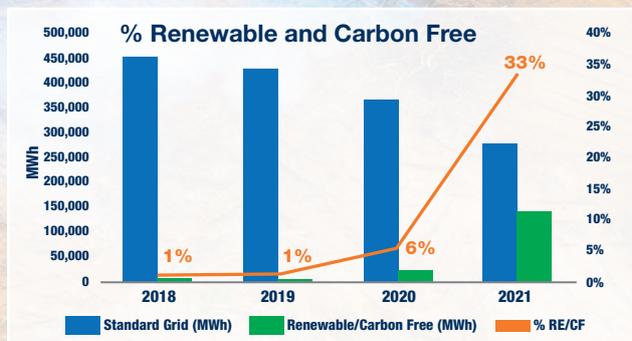
Our strategy to address Scope 3 emissions is developing. In 2022, we will expand our work with our customers, suppliers, and other stakeholders in our value chain to calculate a Scope 3 emissions baseline.

Metric tonnes CO <sub>2</sub> e <sup>1</sup>	2015	2016	2017	2018	2019	2020	2021
Scope 1 <sup>2</sup>	205,570	202,333	192,229	163,866	137,578	116,552	122,817
Scope 2 <sup>6</sup>	137,124	135,427	135,590	174,665	181,264	160,126	107,070
Biogenic <sup>3</sup>	1,368	1,391	1,686	1,628	913	501	877
Total <sup>4</sup>	342,694	337,760	327,819	338,531	318,842	276,678	229,887
Total Energy (GWh)	1,222	1,067	1,147	1,180	1,134	994	1,067
Intensity (mt CO <sub>2</sub> e/£m) <sup>5</sup>	391	346	327	327	304	304	242

- <sup>1</sup> For Scopes 1 and 2 we report our CO<sub>2</sub>e emissions from energy and refrigerants and other process related CO<sub>2</sub>e emissions. Carbon emission factors are used to convert energy used in our operations to emissions of CO<sub>2</sub>e. Carbon emission factors for fuels are provided by International Energy Agency (IEA). We report our emissions with reference to the latest Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. Emissions are excluded from steam supplied by two sites in China and one in Europe. Emissions of total CO<sub>2</sub>e restated for years 2015-2020. Refer to note 3 for specific details. Scope 2 reported include Market-based and location-based factors. Value for Scope 2 GHG location-based only emissions are 124,868 tonnes.
- <sup>2</sup> Total scope 1 emissions were calculated from addition of direct scope 1 emissions and process emissions (i.e. for 2021; 122817 = 118747 + 4070). Process emissions refer to emissions generated from refrigerant uses, anthracites, air pollution controls device, etc. Also, process emissions disclosed (4,070 tonnes) in 2021 rely on historical calculations that could not be evidenced for assurance purposes.
- <sup>3</sup> The GHG Protocol requires that CO<sub>2</sub>e emissions from biomass combustion at stationary sources are reported as biomass CO<sub>2</sub>e emissions (in terms of total amount of biogenic CO<sub>2</sub>e emitted) and are tracked separately from fossil CO<sub>2</sub> emissions. Biogenic emissions have also been updated to reflect an error identified in an emission factor. In previous years biogenic emissions were included as part of our Scope 1 emissions and calculated utilising an emission factor of 1.336 MT CO<sub>2</sub>/MT of wood. The factor has been since revised to reflect the DEFRA factors provided of 0.059 MT CO<sub>2</sub>e/MT of wood. As a result our CO<sub>2</sub>e we are restating our Scope 1 emissions and removing biogenic emissions in our total.
- <sup>4</sup> Total emissions include Scope 1 and Scope 2 only. Biogenic emissions are accounted as carbon neutral however, reported separately.
- <sup>5</sup> For manufacturing, we have selected an intensity ratio based on sales (constant-currency basis). This aligns with our longstanding reporting of manufacturing performance. Emissions from the combustion of biogenic fuels (biomass, coffee husks etc.) within our operations are reported separately to other Scope 1 and 2 emissions, as recommended by the GHG Protocol, and are excluded from our intensity ratio calculation. The data also excludes Scope 3 emissions, and emissions from Company owned and leased vehicles.
- <sup>6</sup> Scope 2 encompasses "indirect emissions" (the result of company activities occurring at sources owned or controlled by another company) associated with the production of purchased electricity. Scope 2 emissions physically occur at the facility where electricity is generated. Scope 2 reported includes Market-based and location-based factors. Value for Scope 2 GHG location-based only emissions are 124,868 tonnes (for 2021).

	2018	2019	2020	2021
Standard Grid (MWh)	455,069	430,406	365,542	278,166
Renewable and Carbon Free (MWh)	5,040	4,791	21,635	139,669
% Renewable and Carbon Free	1.1	1.1	5.6	33.4

- <sup>1</sup> Energy from all sources.
- <sup>2</sup> Constant-currency\* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.



## Energy use (UK) - Streamlined Energy and Carbon Reporting (SECR)

The table below represents our energy use and associated GHG emissions from fuel and electricity in the UK for the 2019, 2020 & 2021 reporting years, in compliance with the mandatory reporting requirements by the UK Government's SECR policy.

The Scope of this data includes six manufacturing sites and two non-manufacturing sites based in the UK. In 2021, the UK accounted for 3% of our global total Scope 1 and 2 emissions, as outlined in our mandatory GHG reporting. Our absolute GHG emissions (Scopes 1 & 2) for our UK operations were down by 42% compared to 2019 levels and 34% compared to 2020 levels.

	2019	2020	2021
Biogas (MWh)	0	0	0
Natural Gas (MWh)	42,210	36,253	37,325
LPG (MWh)	31	24	2.6
Fuel Oils (MWh)	0	0	0
Coal (MWh)	0	0	0
Standard Electricity (MWh)	16,894	986	0
Green Electricity (MWh)	200	14,687	15,083
Total (MWh)	59,245	51,434	52,408
Total Scope 1 Emissions (tonnes CO <sub>2</sub> )	7,750	6,670	6,763
Total Scope 2 Emissions (tonnes CO <sub>2</sub> )	3,818	3,657	0
Total Emissions (tonnes CO <sub>2</sub> )	11,568	10,324	6,763

- <sup>1</sup> Carbon emission factors for grid electricity are calculated according to location-based method.
- <sup>2</sup> We ended 2021 4.3% over previous year results for energy consumption in the UK due to business growth after the COVID-19 pandemic however, 9.4% less consumption than 2019.

A close-up photograph of three water droplets of different sizes resting on a vibrant green leaf. The largest droplet is in the foreground, showing a clear reflection of the leaf's veins. The background is a soft, out-of-focus green, creating a sense of depth and natural beauty.

We have developed initiatives to  
minimise the environmental impact of  
our business, conserve resources  
and promote environmental  
awareness across our global operations



## Water

We use water both in our production operations and for sanitary purposes in our facilities. We launched projects in 2021 to reduce our water usage and those will start to deliver during 2022.

On water intensity, we ended 2021 11% higher versus 2020, driven by business growth and some changes in mix towards more water intensive products.

	2018	2019	2020	2021
Water withdrawal (million m <sup>3</sup> ) <sup>a</sup>	2.17	1.88	1.50	1.73
Water withdrawal intensity (m <sup>3</sup> /£m) <sup>b</sup>	2,097	1,790	1,646	1,821
Water consumption (million m <sup>3</sup> ) <sup>a</sup>	0.61	0.64	0.57	0.51
Water consumption intensity (m <sup>3</sup> /£m) <sup>b</sup>	593	613	609	514

- <sup>a</sup> Water from all sources, including process, irrigation and sanitary use. Water consumed is the difference between water withdrawn and treated water returned to the environment.
- <sup>b</sup> Calculated on constant-currency revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.

### John Righini – President, Technical Ceramics

“As employees and leaders are conducting safety walks, there is an opportunity to add an additional focus on areas where energy or water is being wasted, or to identify opportunities to improve. While it may be challenging to recognise improvement opportunities, a conversation with all employees will allow leaders to understand current practices and have a dialogue on how the process could be made more efficient”.

### Water use



Annualised water use is 28% below 2015 annual levels

Water stress areas are identified as areas with high (40-80%, baseline water-stress level) or extremely high (>80%, baseline water-stress level) stress levels, based on the data from the World Resources Institute, Aqueduct Water Risk Atlas. Meaning more people are competing for limited supplies.

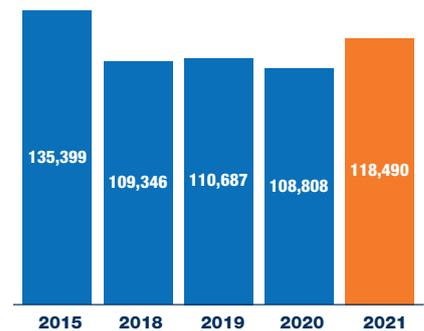
In 2021, water withdrawal in areas with water stress contributed to 7% of the total water withdrawals of the Group. Approximately 21% of our manufacturing operations are in water stress areas. At the end of 2021, our water use in stressed areas increased by 9%, driven by the growth of the business. Water use in these areas consists of water used for processing (48%), sanitary water (41%) and water used for irrigation purposes (11%). Total water used in stressed areas is 12% below 2015 levels.

We return 27% of the water we withdraw to the environment in water stress areas. The balance remains within our products or evaporates during the manufacturing process. In 2021 (where possible), we have implemented systems to harvest rainwater in areas of high and extremely high-water stress.

We see rainwater harvesting as a vital part of developing a sustainable water resource plan in areas of high and extremely high-water stress.

We have two new upcoming projects which include rainwater harvesting and another focusing on cooling towers in our Aurangabad, India and Kizad, UAE locations. By reducing municipal water use we also reduce the amount of water a municipality has to pump and treat. This allows the municipality opportunities to reduce their own environmental impact and their costs. These savings can then be applied to provide long-term water development needs of the community, by utilising the existing infrastructure more efficiently.

### WATER USE (m<sup>3</sup>) - WATER STRESS TOTAL



Annualised water withdrawal in water stressed areas is 5% below 2015 annual levels.



## Waste and recycling

Each year we set internal targets to reduce waste intensity by 5% (as compared to previous end of year levels). We also target an increase in recycling efforts by the same percentage. We drive improvements in these areas through Kaizen and 6S (Sort, Set in order, Shine, Standardise, Sustain and Safety) activities. Primarily, our operations teams follow the principles of Kaizen, which eliminates waste from overproduction, improves quality, increases efficiency, decreases idle time, and reduces unnecessary activities.

2021 saw waste generation improvements made at several sites, through an increased focus on waste segregation, and by improving waste by category. This allows each site to better understand its waste streams in order to evaluate improvement opportunities. In 2021 our waste intensity increased by 7% and overall waste generation increased by 12% compared to 2020 levels. This was primarily driven by business growth. In comparison to 2019, we reduced waste intensity by 9% and reduced waste generation by 18%.

	2018	2019	2020	2021
Waste generation (metric tons)	46,605	48,676	35,660	39,918
Waste intensity (metric tons/£m) <sup>1</sup>	45.1	46.4	39.2	42.0

<sup>1</sup>. Constant-currency\* revenue basis, updated to reflect clarifications and changes in reporting methodology to ensure year-on-year consistency.

Our recycling efforts were impacted in part due to the ongoing COVID-19 pandemic. We experienced a reduction in recycling opportunities, where some of our recycling operators ceased operations, and we saw additional recycling restrictions introduced in China.

	2018	2019	2020	2021
Recycle (metric tons)	25,943	27,833	18,214	21,547
Recycle % of total waste	56	57	51	54

### Partnership with LeanDNA

Through a partnership with LeanDNA, our Technical Ceramics business unit has improved both the visibility and oversight of environmental and sustainability focused projects.

LeanDNA tools allow for increased tracking and visibility combined with executive focus, and new target setting has triggered a paradigm shift.

The business now fully understands the daily impact of their decisions. As a direct result the team has improved their waste intensity by 6.5% (compared to their 2021 target) and recycling by 18.4%.



5  
GENDER  
EQUALITY

## People

Our people shape the culture and are the driving force behind our success. In return we aim to be a caring organisation where everyone feels valued and appreciated.

We need to recruit and retain a diverse range of professionals to help solve our customers' challenges, including materials scientists, application engineers, functional specialists, sales people and operational staff. We are evolving our strategies for recruiting and developing talent. We are developing our employer brand to help us compete more effectively in the talent market and to attract a more diverse pool of potential employees.

8  
DECENT WORK AND  
ECONOMIC GROWTH

Throughout 2021, we increased the size of our internal talent acquisition team and have leveraged our direct sourcing approach to widen our talent pool. In addition, we launched a new talent acquisition platform, which resulted in a threefold increase in enquiries. We continue to ensure that our candidate lists are diverse.

The second half of 2021 saw the launch of our new language training programme, available for the first time for all our people. Our professional and functional skills development offerings also continued to expand, as we increase our investment to meet the growing demand.

We have set ourselves a target that 40% of our leadership population will be female by 2030. To support this goal we introduced our first employee resource group in 2021, Women@Morgan, which focuses on gender diversity.

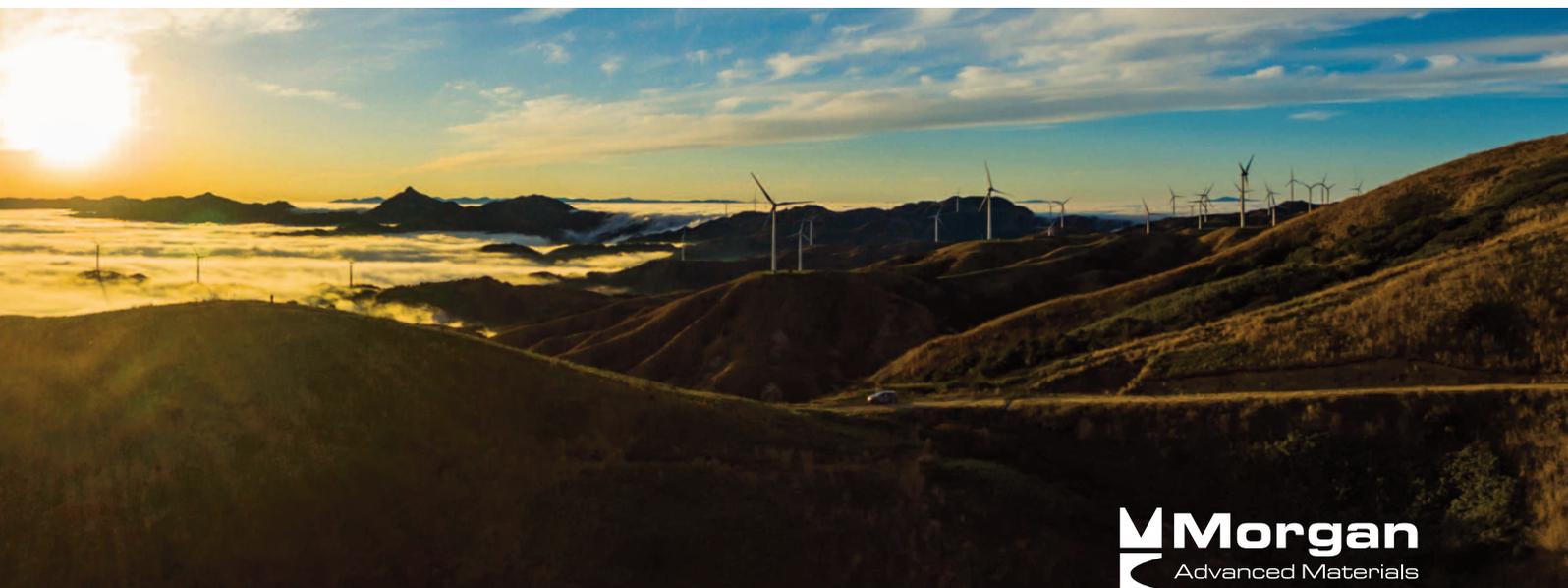
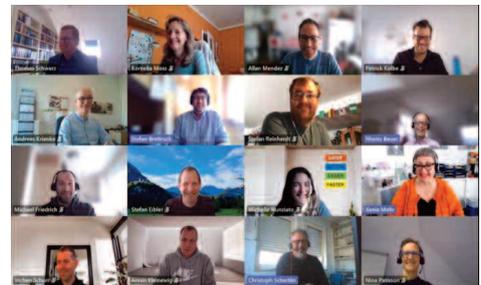
We have also been listening to our people, more in part through the launch of our new employee survey tool called 'Your Voice'. This will allow us to chart our progress and identify the gaps as we look to become a top quartile company on employee engagement. We recorded an engagement score of 50 against our long term top quartile goal, representing a score of over 75.

### Local language training, virtually

To reach our global teams effectively, in 2021 we delivered our first virtual, local language Elevate supervisory training.

The training focused on a range of topics including empathic listening and time management. Our participants then looked to use the practical tips and techniques and incorporate them into their day-to-day interactions with their teams.

Bringing this level of virtual training to our remote teams, in their native language, is a key part of developing our teams in an inclusive manner.





## Safety

We are committed to conducting all our activities in a manner that builds a strong safety culture and supports 'zero harm'.

Our key metric, the lost-time accident (LTA) rate (namely, the number of LTAs per 100,000 hours worked) increased to 0.22 (2020: 0.18). The number of reported LTAs in 2021 increased to 37 (2020: 29). We have likely seen an impact from the pandemic with people more fatigued and distracted than they might otherwise have been, and this has played a part in our accident statistics.

We have a high level of focus on our safety culture and performance and during the year we commenced the rollout of new behavioural training to sites.

**#Morgan  
thinkSAFE**

The interactive workshops bring our thinkSAFE commitments to life and are aimed at all our people. They allow for self-reflection and realisation of the role each of us play in supporting a safe environment.

Every time. **All of the time.**

We have received excellent feedback and we are starting to see the impact and changes to behaviour as a result. This training will continue throughout 2022.

A key part in changing our safety culture is understanding what we do well. We have therefore launched a positive recognition feature in our 'Don't Walk By' app. This gives us the platform to capture and build upon our successes.

Our most recent quarterly topics have focused on great safety conversations. We explored the difference between a culture of commitment and a culture of compliance. Our goal is to build a culture of commitment and a safety conversation from a position of care is the starting point to creating that culture.

	2017	2018	2019	2020	2021
<b>Lost-time accidents <sup>1</sup> Number of LTAs</b>	73	42	27	29	37
<b>Lost-time accident frequency <sup>2</sup> LTAs 1/100,000 hours worked</b>	0.38	0.22	0.14	0.18	0.22

<sup>1</sup> A lost-time accident (LTA) is defined as an accident or work-related illness which results in one or more days' lost time.

<sup>2</sup> Defined as total time lost due to health and safety accidents in the year, divided by the number of lost-time accidents reported in the year.

We are committed to conducting all our activities in a manner that builds a strong safety culture and supports 'zero harm'.

## Wellness and communities

In October 2021, we ran our second mental health awareness month, supporting our people to make better, healthier choices. We believe that good mental health is as important as good physical health and wellbeing. We therefore provide our people with resources and links to charities and organisations across the globe that can support them.

We now have employee assistance programmes in the UK and US, and we are looking at similar schemes in other locations.

We offer managers and colleagues practical tips on communicating with employees with mental health issues, and back a campaign to help break down the stigma of asking for help at work.



### Our mental health first aid programme

Following the success of our UK mental health first aid programme launch, our US teams have begun Mental Health First Aid training, in conjunction with Penn State University. One course attendee, North America HR Director, Melanie commented: "I am proud to say that we are all now certified Mental Health First Aiders, and better equipped to support employee mental health."

### Stourport, UK site goes back to school

Our Stourport, UK site spent time at a local school, supporting the improvement of their outdoor learning space. Joining forces, the Stourport Goes Green and Employee Voice teams worked hard to create a safe and tranquil environment for children and teachers in their local community. From clearing and restoring patio areas and adding a new wood store, to installing bird boxes which encourage local wildlife and new plants across the schools, the efforts of the team are supporting the school in gaining a great outdoor learning environment.



### Supporting our local community is elementary!

Our St. Marys, USA, team have also focused on supporting their local community this year; organising a 'back to school supplies' drive for their local elementary school. Their generosity led to over 1,000

donated items, provided for the children in their local community in support of their studies. A great way to support the education of the next generation.



A cross-functional team was formed in 2021 to evaluate and identify energy and water reduction projects that align with our CO<sub>2</sub>e and water reduction commitments

## Products and collaboration

Over the last year, we have evolved our understanding of the environmental benefits of our products in our major markets. These insights will inform our approach to Life Cycle Analysis (LCA) as we expand our programme and aid further development and design of our products.

The use of LCA is key to our product development decision-making. We have selected Ecochain as our platform, and will use it to undertake LCA studies of products and materials.

Life Cycle Analysis will focus on the most material aspect of product performance and enable solid, objective, data-informed, sustainability-related decision-making. We are starting with an analysis of our top products and services to understand their full carbon, water and waste footprints. We intend to learn from this and identify hot spots in order to make improvements to reduce the overall environmental footprint of our products.

## Collaboration

A cross-functional team was formed in 2021 to evaluate and identify energy and water reduction projects that align with our CO<sub>2</sub>e and water reduction commitments.

We also have plans to invest in new materials and process technologies that will improve the performance of our products and deliver greater environmental and safety benefits to our customers.

Throughout 2021 our people met regularly to discuss and identify climate and water-related challenges within their business units. They shared best practice and identified improvement projects from clean gas conversion to waste heat recovery. They also discussed renewable energy, equipment replacement, new equipment installation and process optimisation opportunities. Many of the projects identified have already been incorporated into 2022 plans.

A team has been brought together to progress our efforts in 2022, to review our systems and technologies with the aim of planning our progress out to 2030. The team will focus on high temperature processes; including kilns and furnaces.

## Sustainable sourcing

We recognise that we need to partner with our suppliers to understand and tackle the current environmental and societal issues facing the world today. To strengthen our approach to sustainable sourcing, we have established an internal supply chain committee.

This committee initially carried out a gap analysis of our policies and practices, which led to the development of our new Supplier Code of Conduct, Conflict Minerals policy and an update to our Modern Slavery policy.

The policies make clear our expectations of suppliers when it comes to, the supply of minerals from socially and environmentally responsible sources, ethical behaviour and the environment.

We have also refined our due diligence process and have developed a questionnaire for suppliers that covers various environmental, social and governance topics, in order to gain insight into their sustainability efforts.

This presents us with an opportunity to share best practice and establish potential collaborations with our suppliers to address important issues in the future.

The committee will continue in 2022 to refine and build on our supply chain engagement programme.

### Supporting clients to achieve their challenging sustainability targets

Our Thermal Ceramics business is supporting industrial clients in petrochemical and iron & steel to achieve their challenging sustainability targets. From improved health and safety to a specific focus on CO<sub>2</sub>e emissions reduction.

Supporting our purpose, our application engineering teams have been in touch with customers to understand what their priorities are, what their needs are, and how we can better support them. This new regular dialogue aids understanding on both sides. As a provider of heat containment solutions, fuel saving is one of the immediate benefits that our products deliver, combined with a real-world reduction in carbon dioxide emissions. We have developed a tool that can quantify the benefits and can also calculate the payback period.

## Committing to our future - where are we now?

As part of our next phase of improvement we have set stretching targets to make further improvements to our environmental impact, to the safety of our employees and to the diversity and inclusion of our workplaces and to the engagement of our employees.

We have defined five environmental, social, and governance (ESG) improvement objectives and targets to improve our performance as a Group:

### Reduce our environmental impact

1. Our aspiration is to be a CO<sub>2</sub>e net zero business by 2050. Our 2030 target is to reduce our Scope 1 and Scope 2 CO<sub>2</sub>e emissions by 50% (from a 2015 baseline).
2. Our aspiration is to use water sustainably across our business. Our 2030 target is to reduce our overall water usage by 30% and reduce our water usage in high stress areas by 30% (from a 2015 baseline).



### Improve our safety performance

3. Our aspiration is to create an environment and culture with zero harm to our employees. Our 2030 target is a lost time accident rate below 0.10 (lost time accidents per 100,000 hours worked).

### Improve the diversity and inclusion of our business

4. Our aspiration is that our employee demographics reflect the communities that we operate in. Our 2030 target is for 40% female representation across our leadership population of our organisation.
5. Our aspiration is a welcoming and inclusive environment where our employees can grow and thrive. Our 2030 target is to attain a top quartile employee engagement score.



## ESG disclosures

### MSCI

An MSCI ESG Rating is designed to measure a company's resilience to long-term, industry material ESG risks. MSCI use a rules-based methodology to identify industry leaders and laggards according to their exposure to ESG risks, and how well they manage those risks relative to peers. The ESG Ratings range from Leader (AAA) to Laggard (CCC). As a result of our efforts to date, we've been awarded the AAA rating for our sustainability achievements and initiatives.

**MSCI**  
ESG RATINGS



### EcoVadis

EcoVadis has become the world's largest provider of business sustainability ratings where their global network includes more than 75,000 companies. Their sustainability assessment methodology is based on international sustainability standards (i.e. GRI, the UN Global Compact, ISO 26000) and includes an evaluation of how well a company has integrated the principles of Sustainability/CSR into their business and management system. The assessment is based on seven principles:

1. Assessment by international experts
2. Tailored to industry sector, country and company size
3. Source diversification to ensure rich stakeholder input for reliable scoring
4. Utilise technology to ensure a secure and confidential process and accelerated cycle time
5. Traceability and transparency of documentation
6. Evidence-based
7. Excellence through continuous improvement



EcoVadis's scorecard illustrates performance across 21 indicators in 4 themes, covering: environment, labor and human rights, ethics and sustainable procurement. In 2021 Morgan scored above the industry average in all categories except sustainable procurement and we have instituted multiple processes in 2021 to address some of the opportunities for improvement identified in the procurement category.

Morgan was awarded a bronze medal in recognition of our sustainability improvements.

### Global Environmental Disclosure - (CDP)

We continue to participate in the Climate Change disclosure through CDP and in 2021 scored a 'B', placing us at the management level. Our score increased over 2020 where we received a score of 'C'. The score indicates we have implemented actions to manage those risks. We have reported our carbon impact to CDP since 2010, with a strong focus on Scope 1 and 2 emissions.

Our 2021 CDP Water Security submission, available at [www.cdp.net](http://www.cdp.net), contains extensive disclosures on our water risks, opportunities, impacts and mitigating actions. We scored a 'B', placing us at the management level. CDP places companies at the management level in recognition of their actions to reduce water use. The score also demonstrates that we have taken steps to assess water related risks to our business and implemented actions to mitigate those risks.

2021 was the first year we received a score for our water disclosure.

Our CDP response provides further disclosures on our approach to climate change and is available at [www.cdp.net/en](http://www.cdp.net/en).

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# Our policies

WE ARE COMMITTED TO A SUSTAINABLE FUTURE.

Our aim is to ensure that our products and manufacturing processes are designed, built and managed in a way that enhances their value to society and our environment.

Read our policies and practices to learn how our ESG approach is governed.

- EHS Policy
- The Morgan Code
- Supplier Code of Conduct
- Conflict Minerals Policy
- UK Corporate Governance Code
- Tax Strategy
- Board and Committee Structure
- Board Committees and Terms of Reference
- Monitoring and Assurance
- Policies and Control Practices
- Board Inclusion and Diversity Policy
- Modern Slavery Statement
- Gender Pay Gap Report
- Human Rights Policy



“ We take our commitments seriously and have plans in place to deliver against them in the coming years, making a step change in our performance”

# Cyber Security

**#Morgan**  
**thinkSECURE**

In October 2021 we held our second annual Cyber Security Awareness Month (CSAM), which was focused on educating our people on cyber security best practice both in their personal lives and their work, to help keep personal data, as well as Morgan's data, safe and secure.

Throughout the month, our people gave their time to learn about cyber security:

<b>Attendee Total</b>	2755
<b>Sessions Held</b>	39
<b>Languages Covered</b>	English, French, German, Spanish, Chinese, Korean & Portuguese
<b>Functions Included</b>	HR, Finance, IT, Legal, Leadership, Execs
<b>Recording Views</b>	100+

To kick off Cyber Security Awareness Month in the first week of October we outlined the current threats that users can be exposed to, and we focused in on how to make sure we all have good cyber hygiene; we talked about how to beat social engineering attacks, how to protect our passwords our devices and our data, how to stay safe when browsing online and working remotely, and best practices for configuring new devices for maximum security.

In week 2, we went a little deeper into social engineering and explored why and how we might be targeted, and what to do if we had or felt we had become a victim. Included in week 2 was a second look at our key message of the month, "Stop, Think, Connect". We also reviewed some examples of phishing emails and the red flags that can be found within them, how to report these messages in both our personal and work lives, and how our processes within Morgan are essential to help reinforce Morgan's cyber security capabilities.

In week 3, we introduced a high-level overview of Data Classification and Handling which will be deployed to all users. The workshops demonstrated the importance of identifying and securing sensitive information using data labelling.

In week 4 our subject matter experts held regional awareness sessions highlighting the data protection laws and regulations we should all adhere to. These sessions provided a broad definition of these regulations, how they impact Morgan, what support is available and our individual responsibilities.

CSAM is just one part of our wider thinkSECURE programme and forms part of Morgan's approach to continuous learnings across each year, focused on cybersecurity awareness activities, projects, training and phishing simulations throughout the year.

We also host an up-to-date thinkSECURE SharePoint Page, owned and managed by our IT team, which focuses on useful information, policies, project updates and support materials.

We are proud to be a cyber aware organisation.

# Task Force on Climate-related Financial Disclosures (TCFD)



Morgan recognises climate change as both a risk and an opportunity for our business and we fully support the implementation of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

Climate change poses challenges to Morgan's supply chain and production operations, as well as to our employees and customers, and as such we aim to address this as part of our corporate strategy.

Morgan Advanced Materials has complied with the requirements of LR 9.8.6R by including climate-related financial disclosures consistent with the TCFD recommendations and disclosures. This statement will give an overview of our Governance, Strategy, Risk Management and Metrics & Targets pillars. Morgan intends to continually improve these climate-related disclosures as we develop a deeper understanding of the potential effects on our business as the climate continues to change.

This statement is provided in advance of insights from scenario analysis that Morgan are progressing through 2022 and will influence our future strategy.

Morgan have been disclosing climate risk under CDP since 2010. Our CDP climate change and water security responses provides further disclosures on our approach to climate change.

In 2021 we scored a 'B' in both disclosures, placing us at the management level.

This recognises that we are taking steps to assess environmental risks to our business and acknowledges that we have implemented actions to manage those risks.

Our responses are available at <https://www.cdp.net/en>



## Governance

Our **Board Chair** has oversight of our climate change, environmental and corporate responsibility matters and ensures that our executive team progresses as planned to meet our commitments and goals. The Board Chair and Board of Directors monitor Morgan's progress against climate related actions at each meeting.

Metrics monitored include:

- Absolute Scope 1 & 2 CO<sub>2</sub>e emissions
- Water usage
- Absolute energy use
- Energy intensity

Where appropriate, large sustainability capital spend projects are reviewed.

Our **Chief Executive Officer** is responsible for climate change, environmental and corporate responsibility matters. He is supported by the Chief Financial Officer, by the Group Executive Management Team and the Group Director for Environmental, Health, Safety and Sustainability (EHS&S).

Our **Chief Executive Officer, Chief Financial Officer** and **Group Executive Management Team** is involved in our ESG materiality assessment and in the selection of our key ESG priorities each year.

Our **Group Director, Environment and Sustainability** was appointed in November 2020, reporting to the CEO, and is responsible for developing further and driving the environmental sustainability and governance strategy and managing and reporting progress to the executive team and board. This includes monitoring climate-related issues, driving strategy execution and reporting into monthly executive meetings on environment and sustainability matters.

The opportunity was taken to review the Group activities around environmental governance and health and safety. From the 1st February 2022, the roles of Group Director Environment and Sustainability and Group

Director Health and Safety will be combined under a single Group Director for Environment, Health, Safety and Sustainability (EHS&S).

The implementation of the climate-related projects is managed at a site level across each business unit. The Global Business Unit (GBU) leads are part of the Group Executive Management Team, reviewing progress against ESG targets, communicating and driving strategy execution in their business units.

The ESG strategy and communications from the Executive Team are cascaded to the wider business through monthly EHS&S leadership calls with the business unit EHS leads, and quarterly internal updates from the CEO to the wider business unit and site leadership teams.

The Remuneration Committee reviews the structure of the annual bonus and Long Term Incentive Plan (LTIP) to ensure that the framework remains appropriately aligned with our strategic aims and culture, and motivates and rewards management for delivering sustainable performance. As in prior years, the measures used for the annual bonus for 2022 include ESG measures being covered in the Executive Directors' personal objectives and therefore reflected in the personal performance element of bonus. For the Long Term Incentive Plan (LTIP), it is proposed to add an ESG measure (carbon reduction) to the structure, to align more closely with Morgan's strategy and priorities. The proposed ESG targets are 5% to 15% per annum carbon reduction.

Training for the Executive team on TCFD and climate risk will be delivered later in 2022 to support Morgan's ESG targets and to improve future disclosures.

In 2021 Morgan committed to the science-based target initiative (SBTi). This commitment drives the governance agenda, including setting targets and monitoring progress against these. We are progressing in 2022 with setting our targets to align with a <2°C SBT.



## Strategy

Climate change is considered as part of a company-wide, multi-disciplinary risk management process, where it is considered as a contributory factor within several risk categories.

Additional information detailing the different time horizons and the types of climate risk and opportunity in each of these are shown in the Emerging Risks section of the 2021 Annual Report.

The materiality assessment was updated in Q4 2021 (described on page 8 of our 2021 Sustainability and Responsibility report) and identifies the ESG topics that impact our business and that are of interest to our external stakeholders. This focussed Morgan's existing environmental strategy around CO<sub>2</sub>e emissions and water usage.

As part of the ongoing risk management process, the Board and the GBUs identified and assessed emerging risks and opportunities. Our key risks and opportunities are identified in the Risk Management section of our 2021 Annual Report.

In 2022 Morgan will set targets to align with a <2°C SBT and undertake climate scenario analysis to build a strategy toward transition to a low carbon economy. Morgan will increasingly use scenario analysis to inform the risk management process to continually understand

the uncertainty of the risks and opportunities climate change poses to the business.

Through the course of 2021, Morgan assembled a cross-GBU Engineering team to identify and evaluate environmental projects across the business. This opportunity to collaborate and share best practice has yielded the project portfolio to complete in the next three years in order to reduce our emissions and meet our stated CO<sub>2</sub>e and water reduction targets.

We have work underway to assess the technologies we will need for the longer term (beyond 2030) to address the CO<sub>2</sub>e emissions from existing natural gas driven production processes. A portion of our R&D resource is now dedicated to exploiting low carbon opportunities.

We have partnered with the British Ceramics Confederation (BCC) and are part of the "Towards Net Zero" commitment. This collaboration brings together businesses from the ceramic manufacturing sector in the UK.

It shares best practice approaches and proven decarbonising technologies, helps nurture and encourage industry decarbonisation, and communicates related challenges for the industry. Our involvement will allow us to explore alternatives to natural gas and share best practice as part of an industry group.



## Risk Management

The Board recognises the need to understand and assess climate related risk and the inherent uncertainty therein. Risk management and internal control are fundamental to achieving the Group aim of delivering long-term sustainable growth in shareholder value.

Principal and emerging risks are identified both 'top down' by the Board and the Executive Committee and 'bottom up' through the Group's global business units (GBUs). Further details on Morgan's procedures for identifying, assessing, and managing risk can be found in the Risk Management section of our 2021 Annual Report.

Our Environment, Health and Safety team meets monthly to oversee management of our most significant environmental risks, including climate-related risks. This group is chaired by our Group Director EHS&S who reports monthly to our Executive Committee. We use a third-party platform to monitor current and emerging environmental regulations across our industry and business sectors. We evaluate compliance regularly and consider how these regulations may impact Morgan.

The severity of each risk is quantified by assessing its inherent impact and mitigated probability, to ensure that the residual risk exposure is understood and prioritised for control throughout the Group. Senior executives are responsible for the strategic management of the Group's principal risks, including climate related risk. The output of ongoing scenario analyses will be integrated into the risk register using this approach.

Throughout 2021, the Board reviewed the preparedness of Morgan to all known principal risks with a significant potential impact at Group level. Additionally, the Audit Committee carried out focused risk reviews of each GBU. These reviews included an analysis of the

principal risks, and the controls, monitoring and assurance processes established to mitigate those risks to acceptable levels.

Substantive impacts are assessed and monitored through Morgan's risk assessment process. Morgan evaluates all management risks including health, safety, and environment (including climate-related risks). Our five business units develop business-specific risk registers and business continuity plans which are used in their annual strategic planning. These registers identify internal and external factors that could pose threats and opportunities to each business. They evaluate the inherent impact, mitigated probability, risk severity, control effectiveness and risk trends. Each risk is assessed by the business unit senior management team who consider the indicators of relevance and their associated impact.

Impact on revenue, litigation outcomes, sites disrupted, applicable fines and others are all quantifiable indicators that could affect each sites risk classification.

Morgan recognise the importance of climate scenario analysis and have engaged with a third party to support with modelling and interpretation of results. This will be incorporated into the Risk Management process to identify further actions towards our 2030 strategy.

Climate risk and scenario analysis awareness training was undertaken with functional leads from the different GBUs in December 2021. In addition, training will be delivered to the executive and group finance teams on TCFD, climate change and scenario analysis in Q2 2022. This will upskill the risk teams at group level and across business units to understand how to respond to scenario analysis, and climate change risk.



## Metrics and Targets

As a company we use GHG Protocol reporting standards to monitor CO<sub>2</sub>e intensity for Scope 1 and Scope 2 GHG emissions. The intensity figure is reported as tonnes of CO<sub>2</sub>e/million GBP. In addition, we monitor total water use, and water use in water stressed areas.

In 2021, Morgan Advanced Materials committed to the Science Based Targets Initiative (SBTi) and anticipates receiving confirmation of our Scope 1 and Scope 2 emissions targets in the next 24 months confirming alignment with the Paris Agreement target to limit global warming to a 2°C or lower scenario. This commitment meant during 2021 we focused on driving energy efficiency improvements within our operations and continued to grow our carbon free and renewable energy portfolio, in line with our commitment to the SBTi.

To achieve this, we established a cross-GBU Engineering project team to execute CO<sub>2</sub>e and water reduction projects, in line with the SBTi and our 2030 targets and 2050 aspirations. The group meets monthly and includes the Group Director for EHS&S. Outputs from the group are reported on a monthly basis to Morgan Advanced Materials' CEO; CFO; Executive Team and our Board of Directors at every Board of Directors meeting.

We track Scope 1 and 2 absolute CO<sub>2</sub>e on a monthly basis. The Scope 1 and 2 absolute values for 1 January - 31 December 2021 across the group are as follows:

- Scope 1 emissions (metric tons CO<sub>2</sub>e) 122,817
- Scope 2 emissions (metric tons CO<sub>2</sub>e) 107,070

In line with Streamlined Energy and Carbon Reporting ("SECR") requirements, Scope 1 and 2 emissions and energy use are disclosed in the Environment section of the 2021 Sustainability and Responsibility report.

We recognise assessment of company's value-chain emissions is an important part of company's long-term sustainability strategy. We aim to work with our key stakeholders and top tier suppliers to reduce indirect emissions and this is Morgan's preliminary step towards minimizing product lifecycle impact. For GHG reporting purposes, Morgan outlines its organisational boundary on an operational control basis, and our Scope 1 and 2 emissions are reported on this basis.

The Scope 3 Standard further categorises these emissions into fifteen distinct categories. However, based on Morgan priorities, we will be focusing on a few key categories in the upstream and downstream.

We are actively evaluating the following areas:

### **Purchased Goods and Services.**

During 2021 we conducted a pilot on our top tier suppliers in terms of climate and other environment, social and governance (ESG) criteria. Following this we will implement a system to evaluate our suppliers in 2022. We will begin our evaluation of the associated Scope 3 emissions in 2022 using the GHG Protocol Scope 3 Evaluator and anticipate commencing to reporting on them once a robust system is in place.

### **Capital Goods.**

We anticipate having a system identified in 2022 to begin our evaluation of Scope 3 emissions associated with capital goods.

### **Fuel-and-energy-related activities.**

We are currently evaluating adequate systems to accurately account or Scope 3 for Fuel-and-energy-related activities (not included in Scope 1 or 2). We anticipate having a plan identified in 2022 to capture this data. We anticipate these Scope 3 emissions associated with Fuel-and-energy-related activities both upstream and downstream will be performed using various tools such as the GHG Protocol Scope 3 Evaluator and IEA emission data. Criteria currently being evaluated include:

- Upstream transportation and distribution.
- Waste generated in operations
- Downstream transportation and distribution
- Processing of sold products
- Use of sold products
- Downstream leased assets

In 2022, we will expand our work with our customers, suppliers, and other stakeholders in our value chain to calculate an initial Scope 3 emission baseline.

In addition to this we are actively exploring product Life Cycle Assessment (LCA). Systems to conduct LCAs were evaluated in 2021, and pilot studies are planned for 2022. Product LCA information will support Scope 3 evaluation across a number of categories.



# Our Aspiration

1. Our aspiration is to be a CO<sub>2</sub>e net zero business by 2050. Our 2030 target is to reduce our Scope 1 and Scope 2 CO<sub>2</sub>e emissions by 50% (from a 2015 baseline).
2. Our aspiration is to use water sustainably across our business. Our 2030 target is to reduce our overall water usage by 30% and reduce our water usage in high stress areas by 30% (from a 2015 baseline).

Morgan's greenhouse gas (GHG) emissions are mostly generated by the combustion of fossil fuels at various stages of our manufacturing processes. We are pleased to report that our absolute GHG emissions for Scopes 1 and 2 are down by 17% compared to end of year 2020. This correlates to a 33% reduction compared to our 2015 baseline.

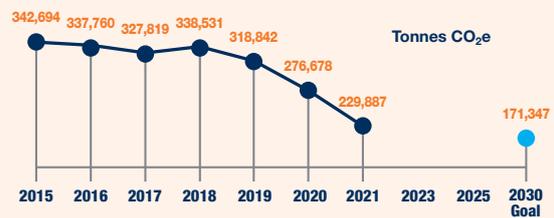
We are also focusing on water reductions in areas of high or extremely high-water stress. Water withdrawal in water stress areas accounts for 7% of our total water withdrawals. Water management plans will be integrated into regular facility assessments to proactively engage our workforce in reduction activities to address water-related issues within the watershed of these local communities.

We are pleased to report that absolute water withdrawal continues to fall across the business, being 26% lower in 2021 when compared to our 2015 baseline. Water use in high and extremely high water stressed area is down 12% compared to 2015.

Water withdrawal and use increased slightly from 2020, reflecting the manufacturing facilities returning towards pre-pandemic levels of production. Investment is planned in 2022 to upgrade key facilities and install new equipment in water stressed areas to reduce water usage and increase water recycling.

Scope 1 & 2 CO<sub>2</sub>e emissions continue to fall as a result of efficiency improvements completed by the Cross-GBU Engineering team and increased renewable energy procurement.

## 2030 CO<sub>2</sub>e progress



Our aspiration is to be a CO<sub>2</sub>e net zero business by 2050. Our target is to reduce our Scope 1 and Scope 2 CO<sub>2</sub>e emissions by 50% (from a 2015 baseline). Values adjusted to remove biogenic emissions from sawdust use at Augusta, Casal and Yixing and coffee husks in Guatemala. Totals include emissions from refrigerant.

CO<sub>2</sub>e is **33%** below 2015 annual levels.

## 2030 Water progress



Our aspiration is to use water sustainably across our business. Our 2030 target is to reduce our overall water usage by 30% (from a 2015 baseline).

2021 water use is **26%** below 2015 annual levels.

We are making good progress however, an increase in 2021 levels is due to business growth after COVID-19 pandemic.

## 2030 Water stress progress



Our aspiration is to use water sustainably across our business. Our 2030 target is to reduce our water usage in high stress areas by 30% (from a 2015 baseline).

2021 water use in stressed areas is **12%** below 2015 annual levels.

We are making good progress however, an increase in 2021 levels is due to business growth after COVID-19 pandemic.

# Independent assurance statement

## Independent Assurance Statement to Morgan Advanced Materials

ERM Certification and Verification Services Limited ('ERM CVS') was engaged by Morgan Advanced Materials Plc ('Morgan') to provide limited assurance in relation to the specified data as presented in Morgan's 2021 Sustainability Report (the 'Report').

### Engagement summary

<b>Scope of our assurance engagement</b>	<p>Whether the calendar year 2021 data for the following performance metrics are fairly presented, in all material respects, with the reporting criteria:</p> <ul style="list-style-type: none"> <li>• Total Scope 1 GHG emissions [tCO<sub>2</sub>e]</li> <li>• Total Scope 2 GHG emissions (location-based method) [tCO<sub>2</sub>e]</li> <li>• Total Scope 2 GHG emissions (market-based method) [tCO<sub>2</sub>e]</li> <li>• Energy use [GWh]</li> <li>• Total Net Water Consumption [m<sup>3</sup>]</li> <li>• Total Waste Generated [metric tonnes]</li> <li>• Waste recycled [metric tonnes]</li> </ul>
<b>Reporting criteria</b>	<ul style="list-style-type: none"> <li>• WRI/WBCSD GHG Protocol (2004, as updated January 2015); and</li> <li>• Morgan's own internal reporting criteria and definitions (waste and water).</li> </ul>
<b>Assurance standard</b>	ERM CVS' assurance methodology, based on the International Standard on Assurance Engagements ISAE 3000 (Revised).
<b>Assurance level</b>	Limited assurance.
<b>Respective responsibilities</b>	<p>Morgan is responsible for preparing the data and information included in the Report.</p> <p>ERM CVS' responsibility is to provide a conclusion on the agreed scope based on the assurance activities performed and exercising our professional judgement.</p>

### Our conclusion

Based on our activities, as described below, nothing has come to our attention to indicate that the data listed under '*Scope of our assurance engagement*' are not fairly presented in the Report and, in all material respects, with the reporting criteria.

### Emphasis of matter

We draw attention to the explanatory notes to the Environmental Highlights data table on page 9 of the Report regarding calculation of process emissions from Morgan's industrial operations. This information should be taken into account by users of the data, but does not affect our conclusion.

**INDEPENDENT ASSURANCE STATEMENT TO MORGAN ADVANCED MATERIALS****Our assurance activities**

A multi-disciplinary team of sustainability and assurance specialists performed the following assurance procedures:

- Virtual interviews with Morgan staff to understand and evaluate the relevant management systems and processes (including internal review processes) used for measuring and collecting the data and information for each of the performance metrics;
- Virtual visits to selected sites (Augusta, USA; Casalpusterlengo, Italy; Kailong, China) to review local data collection and reporting processes relating to the activity data underlying each metrics, and the consistency of reported data with underlying source data and related information;
- A review of emission and conversion factors used in the calculation of the Scope 1 and Scope 2 GHG emissions;
- An analytical review of the activity data underlying the Scope 1 and Scope 2 GHG emissions from all Morgan operated sites and an assessment of the completeness and accuracy of the corporate data consolidation;
- A review and assessment of the completeness and accuracy of the waste and water data for sites within Morgan's operational boundary; and
- A review of the presentation of the data in the Report, to ensure consistency with our findings.

**The limitations of our engagement**

The reliability of the assured information is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. It is important to understand our assurance conclusions in this context.

**Our observations**

We have provided Morgan with a separate Management Report with our detailed findings and recommendations. Without affecting the conclusion presented above, we make the following observations:

- The reported Scope 1 and Scope 2 GHG emissions were calculated based upon assumptions, estimates and exclusions which Morgan has explained. We recommend that Morgan continues to focus on strengthening its GHG emissions reporting methodology and data collection processes, with particular focus on process emissions accounting. Process emissions were deemed immaterial but without clear audit trail of assumptions used as Morgan was not able to provide evidence to support the historical calculations methodology; and
- Morgan does not currently document its approach for calculating sustainability metrics. For example, Morgan's approach for setting organizational boundaries for emissions reporting, definitions, and the source of some conversion factors are not explained in an up-to-date Basis of Reporting document. We recommend that Morgan develops a sustainability data accounting protocol to ensure key sustainability metrics are consistently reported over time.



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4 March 2022

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ERM CVS is a member of the ERM Group. The work that ERM CVS conducts for clients is solely related to independent assurance activities and auditor training. Our processes are designed and implemented to ensure that the work we undertake with clients is free from bias and conflict of interest. ERM CVS and the staff that have undertaken work on this assurance exercise provide no consultancy related services to Morgan in any respect.

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