ASX Task Force on Climate-Related Financial Disclosures Report 2023

ASX

Letter from the CEO

"ASX supports sustainability in all its forms and remains committed to playing an important role in the decarbonisation of the Australian economy."

Helen Lofthouse
Managing Director and Chief Executive Officer

Financial year 2023 (FY23) is the third year that ASX has published a Task Force on Climate-related Financial Disclosures (TCFD) Report. This report details ASX's approach to assessing and managing climate change, including scenario analysis (completed in FY21) on physical and transitional risks and opportunities.

While ASX does not believe it has a material exposure to physical climate change or transition risks we do believe that we must play our role in decarbonisation. In FY21 we set ourselves a target of achieving net zero Scope 1 and Scope 2 emissions by FY25. This included a commitment to using 100% renewable electricity from FY23, which was expected to reduce our emissions profile by at least 85%. I'm pleased to say that we have achieved our FY23 target with a total Scope 1 and 2 emissions reduction of 99% against our FY21 baseline year. And we continue to target net zero for FY25.

We have various other initiatives underway to support our emissions reduction profile. These include encouraging the use of electronic CHESS statements which significantly reduce paper usage, as well as the roll out of our e-waste strategy in FY24 to improve the way that we dispose of and recycle electronic equipment.

ASX is a crucial part of the Australian economy and, as a market operator, we have an important role in supporting decarbonisation. We provide a marketplace for participants to access sustainability-linked products and see growing market interest in this area. We also believe that it is important to encourage transparent reporting by issuers, and continue to support their sustainability journey by offering education sessions to keep them up to date with emerging global standards. We are a member of the ASX Corporate Governance Council which is an independent body with a wide representation of stakeholders providing input on governance issues. Changes to sustainability disclosures and reporting are a significant area of focus by the Council as it continues to develop recommendations based on emerging global baselines proposed by international standards bodies.

ASX supports sustainability in all its forms and remains committed to playing an important role in the decarbonisation of the Australian economy.

Helen Lofthouse
Managing Director and Chief Executive Officer

ASX is a critical part of the Australian economy as it operates at the heart of its financial markets. Accordingly, it has a role as a leader in supporting Australia's sustainable future.

Board's oversight of climate-change risk and opportunities

ASX's risk management strategy and risk appetite is overseen by the Board, supported by the Audit and Risk Committee (ARC). The Board and ARC regularly review the risk management framework and key risks which include climate change risks following their addition to the register in FY21.

ASX has an enterprise risk management (ERM) framework in place to assess current, emerging and potential risks. These risks are assessed under the following categories:

> Operational
> Technology
> Financial
> Legal and regulatory
> Reputational
> Strategic
> Counterparty (clearing).

Physical and transition risks of climate change are considered at a Group and business unit level with the Board and ARC reviewing and approving ASX's sustainability disclosures.

The Board and management conduct an annual planning process, including climate-related trends and threats to ASX's business and strategy. The Board maintains ongoing oversight of ASX's strategy and enterprise risk management throughout the year at regular Board meetings.

Approach to climate change

As the leading equity and derivative market operator in Australia, ASX seeks to lead by example by embracing sustainability in its business and operations. ASX recognises it has a part to play in reducing carbon emissions and has set a goal of achieving net zero for our Scope 1 and Scope 2 emissions in FY25.

This approach to climate change has been developed considering both ASX climate related risks and opportunities. It focuses on what ASX can do to:

> Minimise operational impact on the environment and carbon footprint
> As a market operator, encourage consistent, comparable and reliable climate change reporting and disclosures
> Support Australia's transition to a low carbon economy by offering products and services that enhance decision-making, manage risk and meet the growing demand for ESG investments

Climate-related risks and opportunities

Process for identification and assessment

In FY21, ASX completed climate scenario analysis to evaluate the exposure of our physical locations to climate hazards; and the possible impacts of climate-related transition risks on our business and strategy. Given the long term nature of these scenarios, this analysis remains current in FY23.

Two separate time horizons guided our analysis. A shorter time horizon of 2030 was selected to capture those impacts arising from the policy, regulatory and economic changes in the business environment due to the transition to a low carbon economy. A second time horizon of 2050 was selected to assess the longer term physical impacts from climate change, focusing particularly on ASX's locations, physical assets and the indirect impacts from supply chain disruption due to changes in the climate.

Complementing this, two alternate scenarios were specifically developed for ASX to assess climate change risks and opportunities. They were developed with regard to TCFD's requirements that scenario analysis be plausible, distinctive, consistent, relevant and challenging.

The scenarios utilised elements of two globally recognised climate reference frameworks. To assess ASX's transition risks and opportunities, the Network for Greening the Financial System's (NGFS) 'Disorderly' and 'Hot House World' scenarios were predominantly used. They were selected for their relevance to the financial services sector (in which ASX operates).

For the assessment of ASX's physical risks, two of the Inter-governmental Panel on Climate Change's (IPCC) Representative Concentration Pathways (RCPs) were used: RCP 8.5 (High Emissions) and RCP 2.6 (Low Emissions).

The combination of the NGFS and IPCC reference frameworks generated two emissions pathways: a Low Emissions and a High Emissions pathway.

Climate scenario	Application NGFS scenario	Application IPCC scenario	Scenario characteristics
High Emissions	Hot House World (Current Policies)	RCP8.5	Business as usual approach to climate change; assuming continued growth in greenhouse gas (GHG) emissions, significant physical risks of climate change but potentially less prominent transition impacts. This scenario assumed no change in current government policies.
Low Emissions	Disorderly (Immediate 1.5ºC with limited CDR)	RCP2.6	Assumes no short-term action, but post 2030 global collaboration efforts then culminate in swift international policy response, resulting in GHG emissions reductions and behavioural change to support the transition to net zero.

A range of physical and transition risks and opportunities were identified and validated through desktop research, and stakeholder and shareholder feedback. These risks and opportunities were then evaluated, assessed and validated by a group of ASX senior executives. Each risk or opportunity was considered using ASX's ERM risk assessment matrix and allocated an overall rating of low, medium or high as per the table below.

Risk rating	Impact				
Likelihood	1 – Insignificant	2 – Minor	3 – Moderate	4 – Major	5 – Severe
5. Almost certain	L	M	H	H	H
4. Likely	L	M	M	H	H
3. Possible	L	L	M	M	H
2. Unlikely	L	L	L	M	H
1. Rare	L	L	L	L	M

The different categories of 'likelihood' normally used by our ERM risk assessment matrix were adapted to incorporate longer, climate change appropriate time horizons and are noted in the table below.

Risk likelihood	Standard ERM frequency	Climate change ERM frequency
Almost certain	Once or more every year	1 in 3 years
Likely	Likely to happen every 1 to 3 years	1 in 10 years
Possible	Likely to happen every 3 to 5 years	1 in 20 years
Unlikely	Likely to happen every 5 to 10 years	1 in 50 years
Rare	Likely to happen once every 10 years	1 in 100 years

Physical risks to operations

ASX assessed physical risks under a High Emissions scenario. When looking at a long term time horizon, ASX recognises the inherent risk from an increase in the frequency and severity of extreme weather events on ASX's physical locations is high. However, risk mitigation strategies are already in place, including:

> pre-existing uninterruptible back-up power generation at ASX's primary data centre reducing the likelihood and impact of system outages due to electricity disruption

> ASX's separately located secondary data centre mitigating the risk of weather damage to the primary data centre leading to systems outages. ASX assesses that the overall risk is residually low and therefore within appetite.

The greatest physical risk for ASX's operations currently envisaged comes from the impact of an extreme weather event damaging ASX's data centre, the Australian Liquidity Centre (ALC), located in Sydney, Australia. In particular, the risk of flooding at the site, although mitigated by the location of the ALC being deliberately selected for its elevation and location outside of a one-in-a-hundred-year flood zone.

Table 1: Summary of inherent physical risks table

Physical risks		Risk mitigation
Acute Risks driven by increased extreme weather-related events	Increased severity and frequency of extreme weather events such as storms and flooding	Damage to ASX's technology infrastructure, predominately located at the ALC has a low risk of flooding because its location was selected for its elevated position.
	Increased severity and frequency of extreme weather events leads to increased frequency of power outages at ASX locations	The reputational, regulatory and financial risks of a system outage caused by a power outage are low because ASX's data centre is equipped with on-site power generation which provides back-up electricity in the event of a power outage.
Chronic Risks due to long-term shifts in climate or weather patterns	Higher average temperatures lead to greater cooling requirements	The financial impact of increased cooling requirements for ASX's data centre on operating costs (either through increased electricity prices or higher volumes of electricity purchased) is low given ASX's own electricity costs are relatively small in the context of its overall cost base, and the electricity costs of the data centre customers are recoverable.
	Increased acute and/or chronic impacts of climate change result in higher insurance premiums	The financial impact of increased insurance premiums on ASX's operating costs are low given its insurance premiums are low relative to its overall cost base. The financial impact on ASX's revenues due to higher insurance premiums for Australian companies leading to reduced financial performance and investment attractiveness is also low as it is unlikely the increases will be material to companies' cost bases.
	Australian-listed companies become less attractive due to reduced financial performance arising from weather induced higher operating costs and/or increased operational risk due to changed weather patterns	The risk of lower ASX revenues due to reduced activity from the diminished investment attractiveness of Australian listed companies because of reduced financial performance from weather-induced increased operating costs and/or increased weather-related operating risks was low. This reflects the inherent diversified nature of the companies listed on ASX and the unique impact on each company.

Transition risks

ASX assessed transition risks under a Low Emissions scenario because it was under this scenario that ASX identified the most number of total and transition risks. Transition risks have both direct and indirect ramifications for ASX, given their potential impact on ASX's own business and strategy, and on the business and strategy of ASX's customers.

One of ASX's inherent transition risks relates to the potential impact from changing investor and societal expectations in relation to how a listed company or sector is responding to climate change and the subsequent implications for how investors allocate their capital. This risk has a medium rating because of the role exchanges play in allocating capital from 'old' industries to 'new' ones, and the diversified nature of the companies listed on ASX. While some companies may become less attractive due to a result of climate change, they will be replaced by others seeking capital to fund their solutions that support the transition to a low-carbon economy, or embrace resulting opportunities. Changes from mega trends in the past have often led to larger, more profitable companies emerging.

Table 2: Summary of inherent transition risk assessment table

Transition risks	Opportunities		2030 rating	2050 rating
Risk and legal	Pricing of GHG emissions	Mandatory GHG pricing may increase ASX's operating cost base.	Low	Low
	The adoption of climate and/or energy policies drive a rapid shift towards decarbonisation	Increased costs to facilitate necessary adaptation, including financial costs may result in negative implications for the investment attractiveness of impacted companies, and result in reduced trading, clearing and settlement fees.	Low	Low
	Changes in government policy resulting in more stringent reporting requirements and disclosures from listed companies	Increased reporting requirements may hinder ASX's ability to attract listings and may result in de-listings from companies who want to avoid non-compliance implications.	Medium	Medium
Technology	Changes in energy technology impact the reliability of the electricity grid and prices increase	A reduction in the reliability of the electricity grid may impact ASX's reputation with customers and regulators. It may also reduce ASX's financial performance due to lost trading, clearing and settlement fees because of the disruption to ASX's systems. Higher electricity prices may increase ASX's operational cost base.	Low	Low
Markets	Changing investor preferences results in avoidance of companies not aligned to global climate goals	Changing investor preferences may impact ASX's financial performance as a result of reduced trading, clearing and settlement fees.	Medium	Medium
	Stigmatisation of sector or companies who are high-carbon emitters	These factors may impact ASX's reputation by association and may reduce ASX's financial performance due to a reduction in the trading, clearing and settlement volumes of the stigmatised sector or high-carbon emitting company.	Low	Low
	Increased competition from competitors offering sustainability-linked investment opportunities	The impact of capital being allocated via another exchange may impact ASX's financial performance due to reduced ASX revenues arising from lost fees.	Medium	Medium
	Global or domestic decarbonisation efforts result in stranded assets	Stranded assets may result in ASX-listed companies defaulting (credit risk), investors being unable to effectively price equities and other financial assets (market risk) and/or unable to refinance assets (liquidity risk).	Medium	Medium

Transition opportunities

The scenario analysis confirmed ASX's view that it is well-positioned to develop new products and services that support the transition to a low carbon, climate-resilient economy. While the majority of opportunities identified were considered to be more beneficial under the Low Emissions scenario, they have the potential to deliver financial and strategic benefits to ASX under both a Low and High Emissions scenario.

Table 3: Summary of inherent transition opportunities table

Transition opportunities	Opportunities		2030 rating	2050 rating
Products and services	Increased demand for sustainability-linked investments across various asset classes, products and services	Increasing ASX's offering of sustainability-linked products is likely to benefit ASX's financial performance through additional revenue.	High	High
	Increasing demand for transparent, efficient, liquid carbon-related trading platforms and service offerings	Developing a new carbon market and trading activity is likely to benefit ASX's financial performance.	Medium	Medium
	Changes in Australia's electricity generation infrastructure	Changes to Australia's electricity infrastructure may lead to increased demand for ASX's energy derivatives which is likely to benefit ASX's financial performance.	Medium	Medium
Reputation	Climate change leadership in own operations and memberships	Showing leadership by achieving of ASX's Net Zero target and continually evolving ASX's own climate change reporting may enhance ASX's reputation, supporting its ability to attract investors and talent, as well as meeting customers' expectations.	Low	Low
Resilience	Encourage climate change reporting within listed market	Encouraging listed companies and customers to adopt appropriate climate change reporting may increase the attractiveness of the Australian listed market and in doing so benefit ASX's financial performance through increased trading, clearing and settlement fees, and ability to attract listings.	Low	Low
Energy source	Use of lower emissions energy	Using 100% renewable electricity may reduce ASX's exposure to possible future fossil fuel price increases or emissions taxes.	Low	Low

Impact of business, strategy and financial planning

ASX assessed a range of climate risks and opportunities that could have cost, revenue, reputational and strategic implications for ASX. Overall, this analysis affirmed the Board and management's view that climate change risks pose a low level risk to ASX. It confirmed those risks rated inherently medium or high are mitigated and have a residual low risk rating. It also affirmed ASX's view that the pursuit of transition opportunities will have strategic, financial and reputational benefits for ASX.

As a provider of critical, financial infrastructure, mitigating physical risks to ASX's operations is an important and longstanding element of ASX's business and strategic planning. Accordingly, there are a range of existing defences, business continuity plans and other measures already in place to mitigate weather-related risks. While ASX understands climate change may increase the likelihood and severity of these physical risks, planning for these weather-related risks, through our commitment to system resilience and reliability, is embedded in ASX's management processes as well as our business continuity framework.

We are seeking to mitigate the impact of direct transition risks on ASX by addressing the cost and reputational risks that could arise if ASX did not address its own operational climate resiliency.

Resilience of ASX's strategy

The completion of the climate-related scenario analysis has helped deepen ASX's understanding of the climate risks it faces and validate the resilience of ASX's business and strategy. With our low exposure to both physical and transitional risks, climate resiliency efforts and focus on pursuing those opportunities that will help support Australia's transition to a low carbon economy, ASX is well-positioned to navigate a range of possible climate outcomes.

ASX's climate change response is aligned to a Low Emissions scenario. However, we recognise the importance of continually monitoring and assessing current, emerging and potential climate change risks and opportunities. Accordingly, we will continue to stress test the resiliency of our strategy against both Low and High Emissions scenarios.

ASX's strategic climate resiliency has been strengthened in recent years, particularly in relation to the risks associated with changing investor preferences that may influence their perceptions about companies and/or sectors. Given strong growth in Australia and globally, ASX has been focused on growing the listed technology sector, attracting both domestic and international listings from this climate-resilient industry.

When considering potential indirect transition risks arising from changing investor and consumer expectations about carbon emissions and action on climate change, it's important to recognise ASX's inherent role in transitioning markets from one state to the next, as it has done throughout its history.

Having a marketplace with a framework that requires companies to consider and disclose their material risks, including climate change risks, allows investors to make informed decisions about where to allocate their investment funds. Companies perceived to have a poor approach to climate change will diminish their ability to attract capital. Equally, those companies that manage their climate change risks and pursue their climate-related opportunities, will be attractive to capital.

ASX's view is that we are well-positioned to develop new products and services that support the transition to a low carbon, climate-resilient economy. The transition to renewable energy is underway, and through ASX's energy derivatives business, companies directly involved in reshaping Australia's electricity supply are able to utilise a valuable risk management tool.

Opportunities will continue to present themselves as Australia transitions to a climate-resilient economy. For example, ASX has made a submission to the Australian Clean Energy Regulator (CER) to operate an online exchange-traded market for emissions offsets. ASX's Board and management believe that our trusted independence, enterprise grade technology infrastructure and experience running market oversight activities has ASX well placed to pursue these evolving opportunities.

Risk management

Process for risk identification and assessment

Risk management is central to ASX's ability to deliver trusted, resilient financial markets infrastructure and services.

We understand that risks evolve and change over time. Reviews and assessments of potential, emerging and current business-unit and Group-wide risks are performed regularly as part of ASX's risk management framework.

ASX defines its 'key' risks as those that could have a significant impact on business or operational objectives and/or on ASX's reputation, leading to damage to, or loss of business and/or revenue. In this context, what is determined to be 'significant' is relative to the size of the Group or business unit, depending on the risk being assessed.

Physical climate risks are incorporated in the operational management of ASX's data centre, the ALC. Regular consideration and assessment of the ALC's physical environment is undertaken in managing the energy, cooling and security requirements of the site and building.

As a market operator, ASX recognises the importance of all companies undertaking long-term risk management practices. Equally, we believe we have a responsibility to support our economy transition to a low carbon economy. Climate change reporting is a key step in managing the risk of climate change and driving a transition to a low carbon economy. ASX encourages companies to undertake TCFD reporting through the ASX Corporate Governance Council's Principles and Recommendations.

Risk management integration

As a critical component of Australia's financial services industry, ASX faces numerous and varied risks and opportunities in providing its infrastructure, services and products. Climate change is one of the risks considered by ASX among a broad and comprehensive range of existing and potential long-term risks.

Risk management is a key element of decision-making at ASX. It is integral to our structure, operations and processes. By addressing the full spectrum of risks across the business, including climate change, ASX is in the best position to pursue its opportunities and achieve its objectives. The actual risk across the business is consistent with the Board's view of acceptable risk levels.

Annually a review of major current, emerging and potential risks faced by ASX is completed as part of the ERM framework. This review is completed across the Group ensuring that within the context of ASX's risk appetite boundaries, key risks are being identified, assessed and managed across the business units and functional support areas. Accountability for such key risks reside with ASX's executive management team. They include consideration of climate-related risks and opportunities, the related control environment, and the potential impact on ASX strategic goals and objectives.

Targets and metrics

While ASX's carbon emissions footprint is relatively small, ASX is taking action to reduce it. We believe every bit helps – be it setting an example for our people, partners or across the market.

Climate change statement

ASX believes it is important its response to climate change is aligned with its values as an organisation. While the ASX does not believe it has material risk to climate change, it does have a responsibility to adhere to best practice and be an example for issuers. In FY22, ASX published its climate change statement for the first time:

"ASX's approach to climate change brings together our commitment to being a responsible corporate citizen; our ability to support Australia's transition to a low carbon economy; and our role to encourage transparency from issuers, as a market operator."

Addressing climate change

ASX believes it is important that its response to climate change is aligned with its values as an organisation. While ASX does not believe it has material risk to climate change, it does have a responsibility to adhere to best practice and be an example for issuers.

As the premier equity and derivative market operator in Australia, ASX seeks to lead by example by embracing sustainability in its business and operations. ASX recognises that it has a part to play in reducing carbon emissions. ASX has set a goal of achieving net zero for our Scope 1 and Scope 2 emissions in FY25.

Targeting net zero in FY25

In FY21, ASX committed to using 100% renewable electricity from FY23; the cost of which is included in our routine financial planning processes. This has reduced ASX's carbon emissions by 99% against the 2021 baseline year, and is an important step towards enhancing ASX's operational climate resiliency. We have also set ourselves a goal of being Net Zero for our Scope 1 and 2 emissions by the end of FY25. Last year we made a public commitment to set a science-based target aligned with the Science-Based Target initiative's (SBTi) target-setting criteria within 24 months.

100%[1] renewable electricity sourced in FY23

100% We buy GreenPower

ASX remains committed to supporting corporate Australia in achieving its sustainability goals and looks to lead by example. We have achieved our target of sourcing 100% renewable electricity[1] this financial year and are targeting net zero Scope 1 and Scope 2 emissions by FY25.

Scope 1 and Scope 2 emissions reduction compared to FY21 base year:

FY23 target:	FY23 performance:
85%	99%

Pathway to Net Zero Scope 1 and Scope 2 emissions by FY25

FY21
- ✔ Announced target of net zero Scope 1 and Scope 2 emissions by FY25

FY23
- ✔ 100% renewable electricity sourced[1]
- ✔ Reduced total Scope 1 and Scope 2 emissions by at least 85%

FY25
- > Targeting net zero Scope 1 and Scope 2 emissions

1. Relates to all electricity where ASX purchases directly from the retailer.

Emissions data

ASX emissions data provided below relates to the financial year ending 30 June 2023, is reported on a financial control basis and is presented to the nearest significant figure.

Greenhouse gas (GHG) emissions	Unit	FY23	FY22	% change from prior year
Scope 1 – diesel and gas	tCO_2-e	50	34	46.1%
Scope 2 – electricity (market based) [1,2]	tCO_2-e	63	13,318	(99.5%)
GHG emissions by activity				
Scope 1				
– combustion of diesel and gas	tCO_2-e	50	34	46.1%
Scope 2 (market based) [1]				
– electricity (data centre customers) [1,2]	tCO_2-e	–	9,630	(100%)
– electricity (ASX direct usage) [1,2]	tCO_2-e	63	3,688	(98.2%)
Scope 3				
– travel (business travel and commuting) [3]	tCO_2-e	849	269	216.0%
– electricity usage (third party data centres) (market based) [4]	tCO_2-e	1,561	1,589	(2.2%)
– electricity usage (data centre customers and ASX direct usage) (market based) [2]	tCO_2-e	10	1,192	(99.2%)
– paper usage (office) [5]	tCO_2-e	–	–	–
– paper usage (CHESS statements and notifications) [5]	tCO_2-e	–	–	–
Paper usage				
Office use	tonnes	2.1	2.0	6.1%
CHESS statements and notifications	tonnes	96	140	(31.3%)
Electricity and paper usage				
Electricity GHG emission (excluding ASX's data centre hosting) per $1,000 of revenue generated [1]	tCO_2-e	0.0138	0.0076	81.8%
Paper usage (excluding CHESS statements and notifications) by headcount [1]	tCO_2-e	0.0022	0.0023	(5.4%)

1. The Scope 2 emission data in relation to electricity is reported on a market based methodology. Under the location based methodology, Scope 2 electricity emission would be 12,676 tCO_2-e for FY23, and 13,318 tCO_2-e for FY22.
2. Over 99% of the energy ASX purchased in FY23 to operate its buildings is via Australian Government's accredited renewable electricity product GreenPower purchased through our electricity retailer. The GreenPower program guarantees ASX's electricity use is matched with power from renewable electricity sources (such as solar, wind and biomass). ASX's residual electricity consumption is from satellite offices where GreenPower is not offered by the landlord.
3. Business Travel increased in FY23 due to resumption of travel required for normal business operations uplifting following COVID travel restrictions.
4. Emissions from Secondary Data Centre (SDC) and all other third party data centre sites where ASX does not have operational control over electricity usage have been classified as Scope 3.
5. All paper used in ASX offices is carbon neutral and there are no scope 3 emissions.

Greenhouse gas emissions calculation approach

Greenhouse gas emissions are reported in Kilo-tonnes of CO2-equivalent and include CO2, CH4 and N2O gases. The global warming potential (GWP) rates utilised are sourced from the IPCC's Fifth Assessment Report. Scopes 1, 2 and 3 emissions are calculated in accordance with the GHG Protocol[1] methodology using available emission factors, in order of priority, from the most recent National Greenhouse Accounts Factors released as at the end of the reporting period (Department of Industry, Science, Energy and Resources (Fed)), the most recent Greenhouse gas reporting: conversion factors (Department for Business, Energy & Industrial Strategy (UK)) released as at the end of the reporting period. and NABERS energy rating information available at the end of the reporting period.

Scope	Inclusions	Consumption method of calculation
Scope 1	All natural gas and diesel consumption, including for onsite electricity generation systems, at ASX facilities (those facilities under the operational control of ASX).	In order of priority: > third party invoice information/delivery records; and > onsite meter readings.
Scope 2	Emissions are reported as both location-based and market-based and include grid-supplied electricity. For the calculation of market-based Scope 2 and 3 emissions in relation to renewable electricity, an emission factor of zero is applied for i. mandatory grid renewables (for example through the large-scale renewable energy target (LRET) under the Renewable Energy Target Scheme of the Australian Government); ii. offsite and onsite renewables where Large-scale Generation Certificates (LGCs) have been retired directly or indirectly by third-party providers of electricity or by jurisdictional governments over and above those required by the LRET (or equivalent); iii. onsite renewables where LGCs are not generated; and iv. accredited GreenPower. An emission factor of zero is also applied for the calculation of market-based Scope 2 and 3 emissions where Climate Active certified carbon neutral electricity has been consumed. Where LGCs are generated and sold (not retired), this electricity is treated as non-renewable electricity with equivalent emissions factors as grid-supplied electricity.	In order of priority: > third party invoice records; > onsite meter readings; and > estimates based on available National Australian Built Environment Rating System information for leased facilities.
Scope 3	Includes emissions from business travel, commuting and paper usage.	Business travel and commuting based on total kilometres travelled sourced from travel provider reports or average commuting distance based on employee home location and surveyed primary mode of commute. CHESS statement paper usage based on supplier usage reports. Other paper usage is based on actual paper purchased.
	Electricity consumption is reported for both ASX facilities and third party data centre facilities providing services to ASX.	Consumption of electricity at ASX facilities is calculated on a consistent basis to that utilised for the calculation of Scope 2 emissions. Consumption of electricity at third party data centres providing services to ASX is calculated using, in order of priority: > invoices from relevant third party data centre operators; > written confirmation of electricity consumed in the provision of services to ASX by third party data centres; and > estimated consumption of electricity for the provision of services to ASX by third party data centres based on the number of data centre server racks provided and estimated electricity consumption per data centre server rack (provided by the third party data centre operator).

1. GHG Protocol refers to the GHG Protocol Corporate Accounting and Reporting Standard, a set of comprehensive global standards issued by the World Resources Institute and World Business Council for Sustainable Development to provide a framework to measure and report Scope 1, 2 and 3 GHG emissions from private and public sectors and across value chains. NB reporting in accordance with GHG protocol does not mean reporting in accordance with GHG Protocol Corporate Value Chain (scope 3) Accounting and Reporting Standard. Under the Corporate Standard, companies are required to report all scope 1 and scope 2 emissions, while reporting scope 3 emissions is optional, hence ASX have elected to report scope 3 emissions for selected sources only. The Scope 3 Standard is designed to create further consistency in scope 3 inventories through additional requirements and guidance for scope 3 accounting and reporting.

To: The Directors of ASX Limited

Independent Limited Assurance Report on identified Subject Matter Information in ASX Limited's Task Force on Climate-Related Financial Disclosures Report 2023

The Directors of ASX Limited (**ASX**) engaged us to perform an independent limited assurance engagement in respect of the identified Subject Matter in its Task Force on Climate-Related Financial Disclosures Report 2023 (the **ASX TCFD Report 2023**) for the year ended 30 June 2023 (the **Subject Matter Information**).

Subject Matter Information and Criteria

We assessed the Subject Matter Information against the Criteria. The Subject Matter Information needs to be read and understood together with the Criteria. The Subject Matter Information and the Criteria are as set out below:

Greenhouse gas (GHG) emissions

- Scope 1 – diesel and gas: 50 t CO_2-e; and
- Scope 2 – electricity (market based): 63 t CO_2-e

GHG emissions by activity

- Scope 3 – electricity usage (third party data centres) (market based): 1,561 t CO_2-e; and
- Scope 3 – electricity usage (Data centre customers and ASX direct usage) (market based): 10 t CO_2-e

The criteria used by ASX to prepare the Subject Matter Information is set out in the Greenhouse gas emissions calculation approach on page 11 of the ASX TCFD Report 2023 (the **Criteria**).

The maintenance and integrity of ASX's website is the responsibility of management; the work carried out by us does not involve consideration of these matters and, accordingly, we accept no responsibility for any changes that may have occurred to the reported Subject Matter Information or Criteria when presented on ASX's website.

Our assurance conclusion is with respect to the year ended 30 June 2023 and does not extend to information in respect of earlier periods or to any other information included in, or linked from, the ASX TCFD Report 2023.

Responsibilities of management

ASX management is responsible for the preparation of the Subject Matter Information in accordance with the Criteria. This responsibility includes:

- determining appropriate reporting topics and selecting or establishing suitable criteria for measuring, evaluating and preparing the underlying Subject Matter Information;
- ensuring that those criteria are relevant and appropriate to ASX and the intended users; and
- designing, implementing and maintaining systems, processes and internal controls over information relevant to the evaluation or measurement of the Subject Matter Information, which is free from material misstatement, whether due to fraud or error, against the Criteria.

Our independence and quality control

We have complied with the ethical requirements of the Accounting Professional and Ethical Standard Board's APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)* relevant to assurance engagements, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

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Our firm applies Australian Standard on Quality Management ASQM 1*, Quality Management for Firms that Perform Audits or Reviews of Financial Reports and Other Financial Information, or Other Assurance or Related Services Engagements*, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our responsibilities

Our responsibility is to express a limited assurance conclusion based on the procedures we have performed and the evidence we have obtained. Our engagement has been conducted in accordance with the Australian Standard on Assurance Engagements (ASAE 3000) *Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* and *ASAE 3410 Assurance Engagements on Greenhouse Gas Statements*. Those standards require that we plan and perform this engagement to obtain limited assurance about whether anything has come to our attention to indicate that the Subject Matter Information has not been prepared, in all material respects, in accordance with the Criteria, for the year ended 30 June 2023.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion.

In carrying out our limited assurance engagement our procedures included:

- enquiring of relevant management of ASX to understand the methodologies, processes and controls supporting the aggregation, calculation and reporting of the Subject Matter Information;
- enquiring of relevant management of ASX to understand and assess the appropriateness of the assumptions and greenhouse as emission factors used within the calculation of the Subject Matter Information;
- testing the arithmetic accuracy of a sample of calculations of the Subject Matter Information;
- undertaking analytical procedures over the activity data utilised within the calculations and preparation of the Subject Matter Information;
- testing of activity data utilised to calculate to Subject Matter Information, in particular the consumption of energy at ASX facilities and by third party data centres providing services to ASX. This involved a combination of analytical procedures and substantive tests of details of a sample of third-party records and other relevant underlying information;
- inspecting other supporting evidence to assess the completeness of ASX facilities, third party data centres and greenhouse gas emissions sources; and
- considering the disclosure and presentation of the Subject Matter Information.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

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Inherent limitations

Inherent limitations exist in all assurance engagements due to the selective testing of the information being examined. It is therefore possible that fraud, error or non-compliance may occur and not be detected. A limited assurance engagement is not designed to detect all instances of non-compliance of the Subject Matter Information with the Criteria, as it is limited primarily to making enquiries of the management and applying analytical procedures.

Additionally, non-financial data may be subject to more inherent limitations than financial data, given both its nature and the methods used for determining, calculating and estimating such data. The precision of different measurement techniques may also vary. The absence of a significant body of established practice on which to draw to evaluate and measure non-financial information allows for different, but acceptable, evaluation and measurement techniques that can affect comparability between entities and over time. In addition, GHG quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.

The limited assurance conclusion expressed in this report has been formed on the above basis.

Our limited assurance conclusion

Based on the procedures we have performed, as described under 'Our responsibilities' and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Subject Matter Information has not been prepared, in all material respects, in accordance with the Criteria for the year ended 30 June 2023.

Use and distribution of our report

We were engaged by the Directors of ASX to prepare this independent assurance report having regard to the criteria specified by ASX and set out in this report. This report was prepared solely for the Directors of ASX for the purpose of providing limited assurance on the Subject Mater Information and may not be suitable for any other purpose.

We accept no duty, responsibility or liability to anyone other than ASX in connection with this report or to ASX for the consequences of using or relying on it for a purpose other than that referred to above. We make no representation concerning the appropriateness of this report for anyone other than ASX and if anyone other than ASX chooses to use or rely on it they do so at their own risk. This disclaimer applies to the maximum extent permitted by law and, without limitation, to liability arising in negligence or under statute and even if we consent to anyone other than ASX receiving or using this report.

PricewaterhouseCoopers

PricewaterhouseCoopers

Adam Cunningham

Adam Cunningham
Partner

Melbourne
22 August 2023