



**ENVIRONMENTAL CLEAN  
TECHNOLOGIES LIMITED**



# **Leading a Stable Transition**

**Taskforce on Climate-Related  
Financial Disclosures (TCFD)**

**Inaugural report FY22**

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# Statement from the Managing Director

I am pleased to present Environmental Clean Technologies' inaugural FY22 report, "Leading a Stable Transition", which has been prepared in line with the Task Force on Climate-Related Financial Disclosures (TCFD) framework.

As a listed-ASX company whose stated purpose is to "bridge the gap between today's use of resources and tomorrow's zero-emission future" - through the development of engineering technologies - we felt it essential to take a "best-of-peer" approach via the adoption of this reporting regime before it becomes mandatory for companies in Australia. Accordingly, we intend to fully adopt TCFD recommendations within the guidance period of three years, and ideally sooner.



Our Company has lived and breathed environmental sustainability for over 15 years, so we naturally see the progression to a broader and more purposeful approach to sustainability, founded on the principles of Environmental, Social and corporate Governance (ESG) considerations. Building our Company with the future environment and the community in mind - and indeed all our stakeholders - will ultimately lead to a more sustainable business over the long term. We support this through our culture of sound corporate governance and risk management practices.

Our Global community is now in a race towards net zero emissions, driven mainly by rapid decarbonisation, presenting some genuine challenges in balancing societal impact with fast-moving climate change policies and laws.

Solutions for a stable transition can be found and will deliver both economic prosperity and environmental sustainability. It is ECT's adoption of TCFD which complements our commercial pathway in this transition and which keeps us focused on the risks and opportunities as we deliver solutions for the future.

This transition period - through to 2050 and beyond - is where the Company believes it can make the greatest impact.



**Glenn Fozard**  
Managing Director

# Background to TCFD

Climate change is a systemic risk to the global financial system. The impacts of climate change and corresponding global, national and state-based responses to climate trends represent material risks and opportunities for many companies. TCFD is a set of recommendations that provide direction for mitigation and management of these risks, which are not about a company's impact on the environment, but about the environment's impact on a company's business.

In 2015, the 21st Conference of Parties to the United Nations Framework Convention on Climate Change ("**COP21**") was held in Paris. The parties reached an agreement to address climate change, with the central aim of this agreement being to limit warming this century to well below 2 degrees Celsius (2.0°C) above pre-industrial levels and to pursue efforts to limit warming to 1.5°C above pre-industrial levels ("*Paris Agreement*" or "*Paris*").



Figure 1 Family photo during Leader Event of COP 21/CMP 11 - Paris Climate Change Conference by UNclimatechange is licensed under CC BY 2.0

By 2021, foreshadowed adoption of TCFD recommendations ensued in jurisdictions including New Zealand (mandatory from 2023<sup>ii</sup>) and the United Kingdom (UK). The UK had initially mandated TCFD adoption by 2023 for some companies (and all companies by 2025), but following COP26, this was moved forward to April 2022<sup>iii</sup>. COP26<sup>iv</sup>, held in Glasgow during November 2021, accelerated this trend generally, with mandatory climate reporting by 2024 for all developed countries targeted. In 2022, the US securities regulator proposed that listed companies disclose a range of climate-related risks and greenhouse gas emissions<sup>v</sup> ("**GHG**") as part of the Governments push to join global efforts to avert climate-related catastrophes. In parallel, US President Biden seeks to enact Executive Orders to put climate change risks at the centre of foreign policy and national security<sup>vi</sup>. In the balance of the G7, compulsory recommendations are likely to ensue shortly. To date, over seventy countries have now communicated net-zero targets<sup>vii</sup>.



Whilst organisations should make financial disclosures in accordance with their national disclosure requirements, the TCFD recommendations are globally established as the primary framework for disclosure of information on the management of climate-related risks and opportunities. Global sustainability and financial reporting regulations are consolidating to a more consistent framework and baseline for investor-focussed sustainability reporting (likely through IFRS® Sustainability Disclosure Standards).

In Australia, widespread TCFD reporting is not yet compulsory. However, ASIC has endorsed TCFD<sup>viii</sup> as the framework for mandatory reporting of material climate risks for continuous disclosure purposes. Reporting to the government on GHG emissions, energy consumption and production is likewise required for companies that reach specific emissions or production thresholds.

The ASX publication, Corporate Governance Principles and Recommendations (4th Edition)<sup>ix</sup>, also addresses emerging issues around culture, values and trust. For example, recommendation 4.3 asks boards to focus and report on processes to verify the integrity (accuracy and balance) of all periodic corporate reporting, including integrated and/or sustainability reporting. In addition, recommendation 7.4 asks for disclosure of any material environmental or social risks and how they are - or will be - managed and specifically references the use of the TCFD framework.

Overall, Australia has an increasing expectation from stakeholders, such as investors, government, customers and the community, that businesses assess and disclose climate-related risks. In fact, good positioning on TCFD presents future opportunities for a proactive company - including access to capital markets that demonstrate climate change stewardship, to attraction and maintenance of key employees.

In line with the above, the Company is committed to ongoing disclosure of climate risk in accordance with the recommendations of the TCFD framework as they relate to both physical and transition risks (and opportunities).

Physical climate-related risks are typically defined as either event-driven (acute) or long-term (chronic) in nature. Examples might include floods, fires, cyclones, storms, rising temperatures and rising sea levels.

Transition risks might include a price on carbon, related regulation and policy development, technology risk (with opportunities in disruptive net-zero energy technologies like ECT), resource efficiencies (energy efficiency, circular economy, EVs, electricity from renewables), supply chain risks (and opportunities for companies that recycle along the supply chain), demand risks - including the risk of stranded assets, reputation risk, and risk of future litigation (with opportunities for products or services that demonstrate GHG reductions).

Physical and transition risks will be explored further in the *Strategy* section below.



# The TCFD Recommendations

The TCFD recommendations<sup>x</sup> surround four thematic areas that represent core elements of how companies operate: *Governance*, *Strategy*, *Risk Management*, and *Metrics and Targets*:

## *Governance*

- Outlines a company's intent regarding acknowledging climate risks, oversight of climate risks and responsibility for climate-related risks.

## *Strategy*

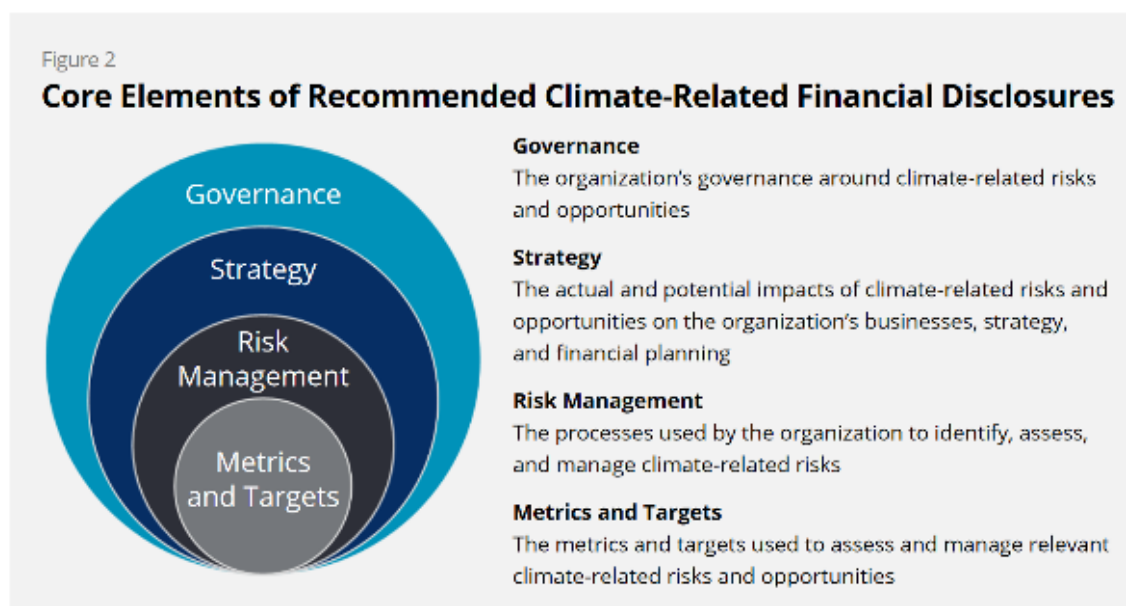
- Measures the actual impact of physical and transition risks and a company's response to these risks and opportunities.
- Outlines potential risks and opportunities and positions strategically based on future scenarios (e.g., no more than 2°C planetary warming, per *Paris*, or other relevant scenarios).

## *Risk Management*

- Outlines how a company identifies, assesses and manages physical and transition climate-change risks and transitions, and further how these are integrated into company risk management processes.

## *Metrics and Targets*

- Discloses material metrics and targets used to assess climate change risks and opportunities in line with the strategy and risk management processes above, including Scope 1 (direct company emissions) and 2 (indirect emissions from energy purchased by company) GHG emissions targets and performance disclosure.
- Whilst TCFD recommends Scope 3 disclosure, this is complex for baseline measurement.
- Any relevant data attained as a baseline for measurement represents an opportunity - what gets measured gets managed.



Source: *Recommendations of the Task Force on Climate-Related Financial Disclosures (page 6)*<sup>xi</sup>

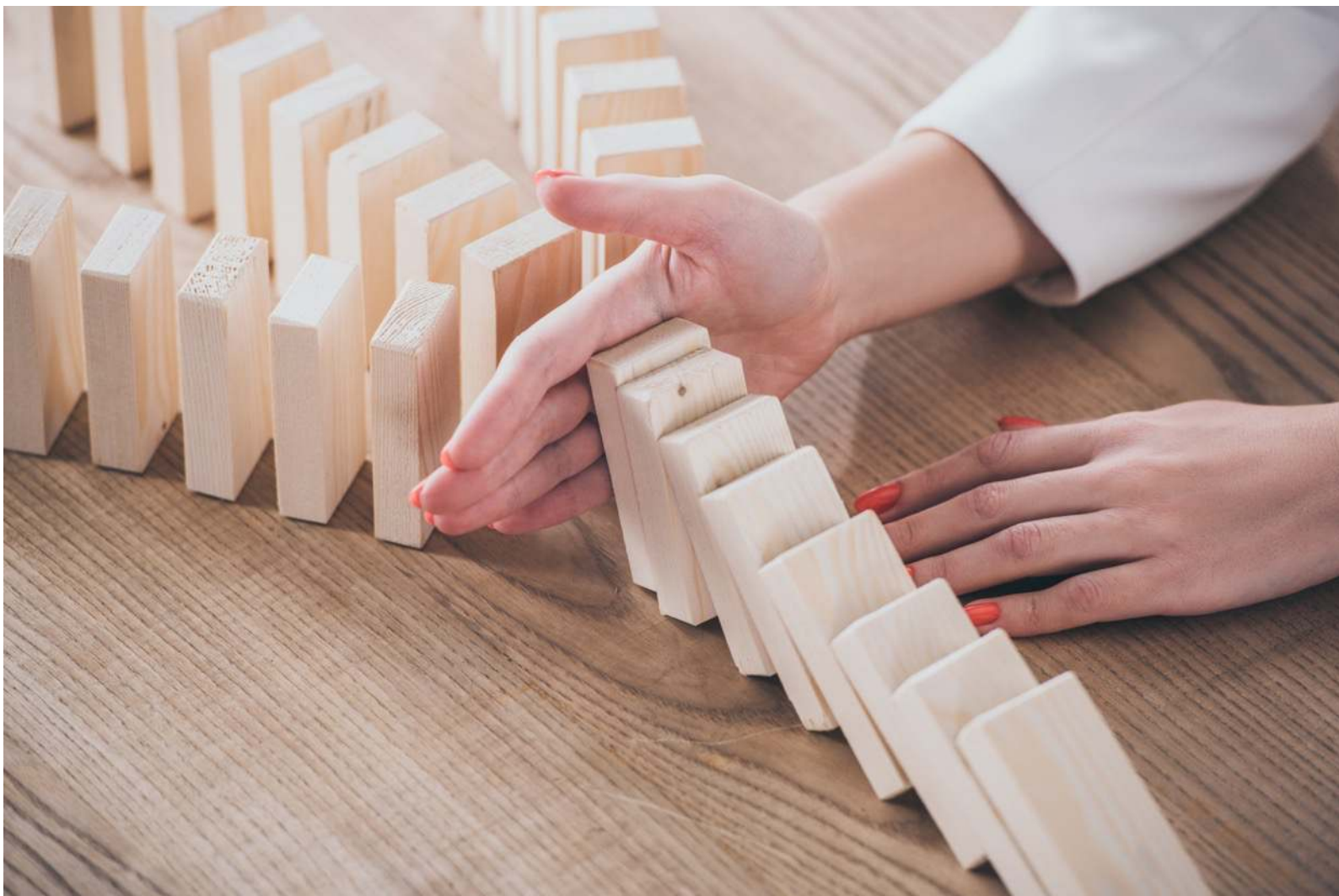
# GOVERNANCE

The ECT Board understands that sound corporate governance is key to driving long-term sustainable outcomes for all ECT's stakeholders. The Board also understand that emerging financial and non-financial risks evolve and change over time.

ECT's Audit and Risk Committee - which now includes a dedicated ESG resource - constantly monitors all emerging stakeholder risks and opportunities as provided by the business and reviews them regularly as part of the Company's risk management framework. Following the review process, the Audit and Risk Committee then enter material risks on the Company's Enterprise Risk Management (ERM) Risk Register. The ECT Board also reviews the risks on the Risk Register periodically. As such, via the Risk and Audit Committee, the ECT Board actively considers climate-related risks and opportunities when overseeing, reviewing and resetting ECT's strategy.

The Audit and Risk Committee also review the risk management framework itself at least annually to ensure that it remains suitable for the Company's operations, performance objectives, and strategy and that the Company's future business plans and KPI's are aligned with the evolving risk parameters set by the Board. Additionally, ECT's Board Skills Matrix (found on the Company website<sup>xiii</sup>) outlines ECT Board competencies and includes climate change and ESG related skill sets.

Stakeholder perceptions are also vitally important to the success of ECT. Accordingly, the Company is drafting a Stakeholder Engagement Plan and is ultimately seeking to actively engage with groups that are ranked according to the influence (or power) and impact (or interest) they may have on ECT's operations. Stakeholder groups include employees, customers, suppliers, lenders, potential off-takers, government, regulators, shareholders, R&D partners, community leaders, the media and more. Ongoing feedback from





these groups is anticipated to help ECT gauge where the Company could have future risk exposures, improve communications, pivot certain strategies, and how it compares to its peers.

From a reporting perspective, whilst there are no mandatory requirements to provide climate-related information to ECT stakeholders in ECT's Annual Report - other than disclosure of material business risks - the Board has elected to transparently include material physical and transition climate-related risks (and opportunities), as they relate to ECT's business over the short, medium and long-term, via this inaugural TCFD Report, to be released at the same time as the Company's FY22 Annual Report.

During FY21, ECT's Board elected to disclose against the World Economic Forum's (WEF) core ESG Stakeholder Capitalism Metrics<sup>xiii</sup> and instructed management to set up an impact measurement plan for each of these Metrics contained within the WEF's four pillars of *Governance*, *People*, *Prosperity* and *Planet*. Public disclosure relating to progress and performance against these metrics has been made via quarterly and bespoke ASX announcements and ongoing updates on the Company's website<sup>xiv</sup>.

Within the WEF ESG framework, measurement of climate-related risks and opportunities - i.e., via the TCFD - plays a leading role within the '*Planet*' Pillar, with associated business processes above included in the '*Governance*' Pillar. Any discovery of emerging risks and opportunities from ECT's business processes is immediately communicated to ECT's Managing Director, who then consults the ECT Board to assess whether risks or opportunities are deemed material to ECT's business and meet continuous disclosure requirements.

Recognising the important role ECT can play in the growing opportunities surrounding Australia's energy transition, in late 2021, ECT's Board set an interim net zero target (Scope 1 and 2 GHG emissions and limited Scope 3) for ECT's corporate offices and staff, with implementation achieved before the end of the FY22 financial year<sup>xv</sup>. ECT's future projects are also forecast to have a net zero - and even net-negative - GHG footprint - once operational at commercial scale. ECT Board incentives are intended to be tied to adherence to climate-related targets in future years and other key ESG targets.





# STRATEGY

Process for identifying and assessing ECT's Climate-related risks and opportunities

A company's diverse stakeholder set need to understand how climate-related issues may affect an organisation's businesses, strategy, and financial planning over the short, medium, and long term. Such information is used to inform expectations about an organisation's future performance.

To determine which risks and opportunities could have a material financial impact on the Company, a range of physical and transition risks and opportunities were identified and validated through desktop research, overlayed with stakeholder feedback (where possible). These risks and opportunities were then assessed and validated by ECT's Audit and Risk Committee and the ECT Board. Each risk or opportunity was considered as part of the Company's risk management framework, with material risks (those with an inherent risk rating of *medium* or above or a residual risk rating of *moderate* or above) held on the Company's ERM Risk Register, outlined in the Governance section above.

To begin with, each risk or opportunity is allocated an overall *inherent* risk rating (i.e., before risk mitigation) of 1-5, as outlined in the table below:

		Probability / Likelihood					
		Almost certain	Very Likely	Likely	Possible	Unlikely	Rare
Impact	Extreme	5	5	5	5	4	4
	Very Severe	5	5	4	4	3	3
	Severe	4	4	3	3	2	2
	Moderate	3	3	2	2	2	2
	Low	2	2	1	1	1	1
	Rare	1	1	1	1	1	1

The different categories of 'likelihood' usually used by our ERM Risk Register have been adapted to incorporate longer time horizons to align to the short, medium and long-term-climate-related-risks-and-opportunities and are outlined below:

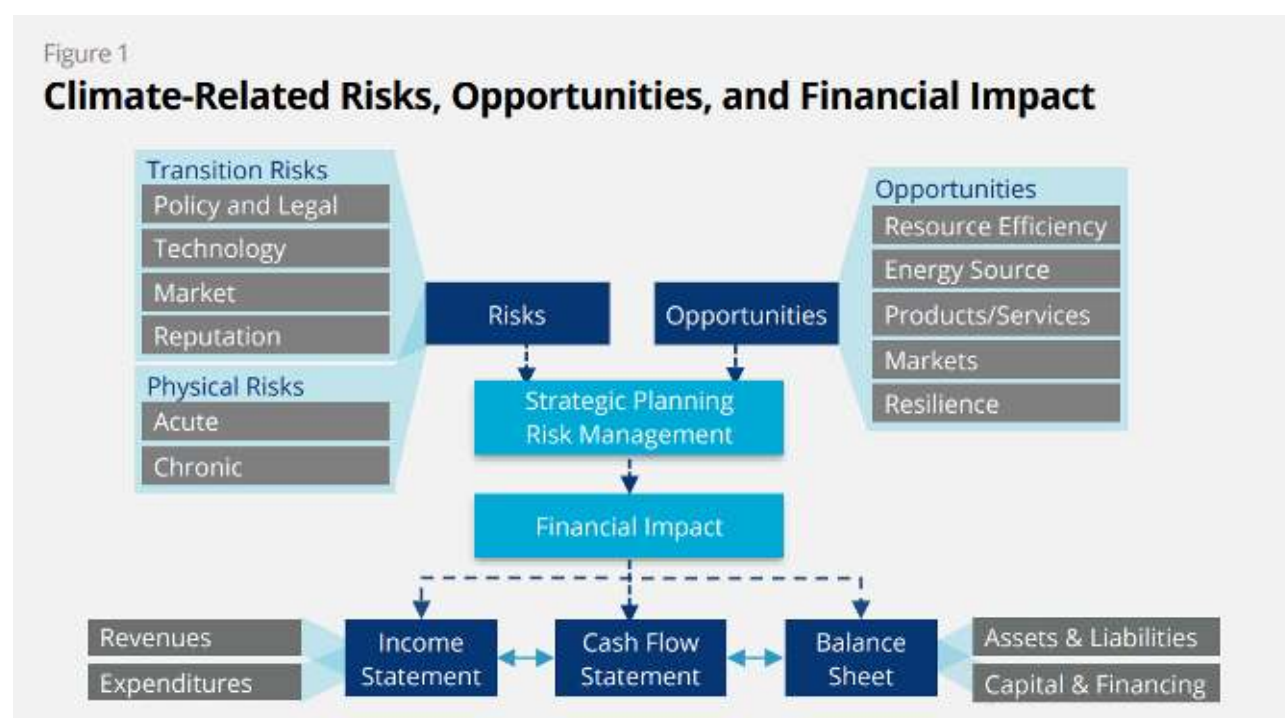
Risk Probability	ECT Existing ERM Frequency: Likelihood in 12 months	Climate change ERM frequency
Almost certain	> 95%	Most years
Very Likely	80% to 95%	Likely 1 in 3 years
Likely	50% to 80%	Likely 1 in 10 years
Possible	20% to 50%	Likely 1 in 20 years
Unlikely	6% to 20%	Likely 1 in 50 years
Rare	< 5%	Likely 1 in 100 years

The Company has also used three different time horizons for our analysis:

- First, within 12 months, is a reasonable timeframe for immediate business planning.
- A time horizon of 2030 to capture impacts arising from the policy, regulatory and economic changes in the business environment due to the transition to a low carbon economy; and
- A time horizon of 2050 to also assess the longer-term physical impacts of climate change, including a focus on ECT's locations and the indirect impacts from supply chain disruption due to changes in long-term climate patterns.
- For this report, any longer timeframe does not reflect the lifetimes of the Company's assets or liabilities.
- Following the implementation of the Company's risk-mitigation strategies and controls to material risks, the *inherent risks* are typically expected to reduce (depending on the level of control), resulting in lower *residual risks* (see below).
- It should be noted that given ECT does not have material revenues, the impacts outlined are currently qualitative. However, it is anticipated that this will evolve into a quantitative assessment, adjusted for future time horizons, as ECT becomes generates ongoing revenues.

## Physical Risks

A company's vulnerability to climate impacts goes beyond the physical exposure at owned facilities. It includes supply chains, distribution networks and its customers. Furthermore, a company's resilience to physical climate impacts depends on its risk management, business plans, and governance. As can be seen in *Figure 1<sup>xvi</sup>*, the TCFD views climate risks and opportunities as drivers of the financial impact on a company and not environmental or sustainability issues:



Source: Recommendations of the Task Force on Climate-Related Financial Disclosures (page 8)

Acute physical risks are events associated with direct damage to facilities or infrastructure owned by ECT, its suppliers or customers. Examples of acute physical risks might include floods, bushfires, or storms. Acute risks tend to lead to large-scale impacts and are typically short-term.

Chronic physical risks, such as rising sea levels, changes in temperature, increased rainfall or extreme variability in weather patterns, tend to emerge gradually. Chronic risks typically have lesser and longer-term impacts.

All physical risks usually have both primary and secondary effects. The primary effects relate to direct impacts on assets. The secondary effects include supply chain disruptions, distribution networks, customers, and overall demand changes.

A summary of ECT's material physical risks is outlined in the tables below. The tables are not exhaustive and may be updated from time to time as physical risks emerge.

## ERM Risk Register

<b>TCFD Physical Risk Type</b>	<b>Acute (S-Term)</b> Risks driven by extreme weather-related events - ECT value chain.
<b>Description</b>	Increased severity & frequency of extreme weather events may cause sudden damage to ECT's suppliers/customers' facilities. For example, ECT is co-located with the supplier of lignite (Yallourn), which has flooded in recent years. Generally, flooding (or fires) may also temporarily restrict access to customer sites & is outside of ECT's direct control
<b>Impacts</b>	Short-term loss of inputs could lead to downstream disruption. Delays or increased costs passed on to customers may reduce demand. Any persisting restriction of access to customers' sites could also lead to a permanent loss of revenues from associated sites.
<b>Inherent Risk rating</b>	Medium
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>• Loss of lignite supply in this way is intended to be covered by insurance.</li> <li>• ECT will continue to work with suppliers &amp; customers to understand the physical impacts on their operations from climate change (e.g., fire, flood) &amp; will consider these risks when entering future contracts.</li> <li>• ECT's Business Continuity Plans (BCP's) will also be augmented to consider extreme weather-related impacts of climate change.</li> <li>• ECT will also seek to secure backup supply agreements - whilst being able to secure short-term supply from alternate sites - to mitigate this risk further.</li> </ul>
<b>Residual Risk rating</b>	Medium



<b>TCFD Physical Risk Type</b>	<b>Chronic (L-Term)</b> Risks from L-T shifts in climate or weather patterns - ECT value chain.
<b>Description</b>	Medium or long-term losses from flooding or fire risk events could negatively affect supply chains and the assets of ECT's suppliers/customers.
<b>Impacts</b>	Significant increase in medium to longer term flooding or fire events could affect ECT's proposed project site. Significant floods that impact groundwater quality may lead to Government removal of water access - ECT may face a permanent loss of inputs & may need to source supply from elsewhere. In addition, following a significant flood or fire, ECT would face difficulties if it must relocate to another site due to its fixed assets.
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>Whilst loss of water will impact Yallourn's ability to produce power, it is unlikely to affect lignite supply in the short term.</li> <li>ECT will continue to work with our value chain to understand future physical impacts to their operations from climate change (e.g., fire, flood) &amp; will consider these risks when entering future contracts.</li> <li>Existing BCPs will be augmented to consider longer-term weather-related impacts from climate change.</li> <li>ECT will also seek to secure longer-term backup supply agreements.</li> </ul> <p>Ongoing constructive dialogue with all levels of government on energy &amp; climate policy would be expected to provide a favourable operating environment for such scenarios, further mitigating this risk.</p>
<b>Residual Risk rating</b>	Medium

<b>TCFD Physical Risk Type</b>	<b>Chronic (L-Term)</b> Risks from L-T shifts in climate/weather patterns - ECT sites.
<b>Description</b>	Relocation of company assets due to impacts from weather events at own site or destruction of a co-located site (floods, fires etc.)
<b>Impacts</b>	Logistical difficulty & high-cost burden in relocating assets. Ongoing downtime in operations affecting output/revenues. Reduced speed to market for key R&D products may affect customer demand.
<b>Inherent Risk rating</b>	Moderate
<b>Mitigation Controls</b>	The Company will continue to improve our understanding of potential future physical impacts of climate change on our business to ensure continuity of operations. In addition, as ECT expands, future sites will undergo physical impact assessments, further mitigating this risk.
<b>Residual Risk rating</b>	Moderate

Should ECT lose coal supply due to physical climate-related impacts (or for any reason), the Company can currently source limited supply from Bacchus Marsh, and reduce lignite in the feedstock mix whilst negotiating new supply agreements.

Generally, ECT will deepen its understanding of the short, medium and long-term physical impacts on ECT-owned sites and those of our customers and suppliers and augment our strategy and Business Continuity Plans (BCP's) accordingly.

## Transition Risks

Given the diversity of ESG - and subset, climate change stewardship - the Board pays attention to whether the Board composition itself is sufficiently diverse in terms of knowledge, skills, experience and background to facilitate effective discussions and make informed decisions on potential ESG risks and opportunities, especially transitional climate-risks.

Transition risks, directly and indirectly, impact ECT's business and future strategy. For example, one of the inherent transition risks relates to changing expectations from stakeholders, which drives a heightened need for ECT to demonstrate its understanding and response to climate-related risks and opportunities - and to report under the global TCFD framework itself.

ECT believes it will become more attractive to its current and future stakeholders by transparently outlining climate-related risks and opportunities and future positioning in a 2.0°C or lower warming scenario. The Company firmly believes it can play a key role in Australia's energy transition to a low-carbon economy.

A summary of ECT's material transition risks is outlined below and is split into TCFD categories:

- Policy & Legal
- Technology
- Market
- Reputation

The table is not exhaustive and may be updated from time to time as risks emerge.

TCFD Transition Risk Type	<i>Policy &amp; Legal</i>
Description	Increased domestic government subsidies/political support for pure renewables companies - Current Government has proposed increased renewables targets.
Impacts	Weakened competitive position against renewables that benefit from subsidies. Wholesale government support for renewables would likely result in reduced support from capital markets & other stakeholders for non-renewables, with potential for write-offs or asset impairment if support is significant & subsisting.
Inherent Risk rating	High
Mitigation Controls	<ul style="list-style-type: none"> <li>• ECT relies on external capital to fund the business, whilst having ongoing constructive dialogue with all levels of government on energy &amp; climate policy. The Company's R&amp;D plans &amp; business strategy is focussed on the transition to a net-zero economy, that includes a shift to renewables over time.</li> <li>• Whilst there is a likely possibility of increased government support to accelerate early adoption of renewables, many logistical &amp; technical barriers to achieving this remain.</li> <li>• Revenues achieved in the transition phase may be re-invested to further accelerate R&amp;D in technologies that complement renewables.</li> </ul>
Residual Risk rating	Moderate

<b>TCFD Transition Risk Type</b>	<b><i>Policy &amp; Legal</i></b>
<b>Description</b>	<ul style="list-style-type: none"> <li>Regulation change that constrains current activities: sudden intervention in energy markets to limit the impact of climate change by targeting high-emitting companies, or companies in the fossil fuels sector.</li> <li>Example: Yallourn scheduled to close in 2026-28.</li> </ul>
<b>Impacts</b>	Inability to effectively anticipate, plan or respond to uncertainty regarding climate-related government policy direction leaves ECT exposed to unknown costs, write-offs or asset impairment & could hamper the ability of the Company to produce sustainable revenues, which may also result in a reduction in support from capital markets. If prohibition of activities do not allow the business model to continue operating, this is potentially an existential threat.
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>ECT is not a high-emitting company but does use lignite to generate valuable hydrocarbons &amp; critical minerals.</li> <li>ECT also has ongoing constructive dialogue with government on future energy &amp; climate policy to best understand the future operating environment, mitigating the risk of unforeseen changes to regulations. In the event of Yallourn shutting down as planned, ECT anticipates that access to the site will continue for low-emissions projects, such as ECT's Net Zero Emission Hydrogen Refinery.</li> </ul>
<b>Residual Risk rating</b>	Moderate

<b>TCFD Transition Risk Type</b>	<b><i>Policy &amp; Legal</i></b>
<b>Description</b>	Exposure to future litigation.
<b>Impacts</b>	<ul style="list-style-type: none"> <li>Increased costs &amp;/or reduced demand for ECT's products &amp; services resulting from fines &amp; judgments or reputational damage.</li> <li>Increasing exposure of directors to litigation (e.g., for non-disclosure of climate risks or non-preparedness).</li> </ul>
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>The Company publicly discloses material risks &amp; has begun quarterly ESG disclosures, that include climate-change risks.</li> <li>In May 2022, the Board voluntarily adopted TCFD (disclosures covering governance, strategy, risk management &amp; metrics &amp; targets relating to climate change) as part of Annual Reporting to stakeholders &amp; would seek to implement TCFD recommendations ahead of the 3-year guidance, demonstrating preparedness on climate change.</li> </ul>
<b>Residual Risk rating</b>	Moderate



<b>TCFD Transition Risk Type</b>	<b>Technology</b>
<b>Description</b>	Technological improvements / new entrants that support the accelerated transition to a low-carbon economy, leading to reduced demand for ECT's products.
<b>Impacts</b>	<ul style="list-style-type: none"> <li>• Potentially weakened competitive position.</li> <li>• Reduced margins &amp; revenues into the future.</li> <li>• Increased adaptation &amp; R&amp;D investment costs to stay ahead of technology changes. Impairment of obsolete technology assets &amp; reduction in value of existing IP or patents.</li> </ul>
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>• ECT is an R&amp;D company that invests in leading technology solutions for the transition to net-zero, with strategy &amp; business planning constantly reviewed against the future operating environment. Its low-cost technologies are immediately deployable, likely generating significant revenues in any transition phase, which are able to be re-invested over time to further accelerate R&amp;D investment in technologies that complement renewables technologies.</li> <li>• ECT's current &amp; future collaboration opportunities are anticipated to support ECT (&amp; its partners) at the forefront of technological change.</li> </ul>
<b>Residual Risk rating</b>	Medium

<b>TCFD Transition Risk Type</b>	<b>Market</b>
<b>Description</b>	<ul style="list-style-type: none"> <li>• Capital Markets - stronger support for pure renewables (equity, debt) &amp; consumer sentiment shift to avoidance of companies or sectors not aligned to global climate goals, or GHG emissions thresholds.</li> <li>• Negative Screens by ESG funds/banks &amp; declination of insurance cover for companies in fossil fuels sector.</li> </ul>
<b>Impacts</b>	<ul style="list-style-type: none"> <li>• Capital to fund technology &amp; insurance cover may become difficult to source &amp; more expensive.</li> <li>• Increased costs of compliance, reporting, professional advice &amp; staff re-training to meet stakeholder expectations on climate change, as a potential prerequisite of raising capital from stakeholders.</li> </ul>
<b>Inherent Risk rating</b>	Extreme
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>• ECT provides technology solutions that facilitate a stable transition to net zero.</li> <li>• ECT cannot mitigate this risk entirely but is positioning to be a 'best-of-peer' ESG Company through transparent disclosure &amp; leadership on solutions to <i>Paris</i>, which are intended to increase transparency &amp; attractiveness to stakeholders.</li> <li>• The integration of climate-risks &amp; opportunities into ECT's ERM risk processes demonstrates proactive strategy around climate-risks &amp; opportunities, sound corporate governance &amp; climate stewardship.</li> <li>• This has been further supported through voluntary TCFD adoption.</li> <li>• ECT's stakeholder engagement plan seeks to foster future engagement particularly to capital providers previously unavailable to the Company.</li> </ul>
<b>Residual Risk rating</b>	High

<b>TCFD Transition Risk Type</b>	<b>Market</b>
<b>Description</b>	Re-pricing of fossil fuels (e.g., direct increase in the price of lignite, or indirectly increase from mandatory carbon price).
<b>Impacts</b>	Reduced operating margins or increased liability / reduced carrying value of assets relating to emissions attached to the processing of fossil fuels.
<b>Inherent Risk rating</b>	Medium
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>Although Australia does not have a mandatory carbon (emissions) price, ECT has ongoing dialogue suppliers &amp; government who influence lignite pricing.</li> <li>The Company's contract currently preserves the price of key inputs (other than CPI increases) for a given volume, providing some certainty during the contract life (currently until 2026).</li> <li>ECT's net-zero process may generate additional revenues from carbon credits generated, providing a natural hedge against any future price increases to lignite (if applicable).</li> <li>ECT is looking to secure backup supply agreements (per above).</li> </ul>
<b>Residual Risk rating</b>	Low

<b>TCFD Transition Risk Type</b>	<b>Reputation</b>
<b>Description</b>	Negative perceptions due to perceived inaction on climate change, or organisational culture not suited to it.
<b>Impacts</b>	Perceived inaction relating to climate change is an immediate risk which may crystallise with little advanced warning & could lead to brand damage, reduced revenues & negative workforce effects, leading to reduced productivity, lower employee retention & lower attraction. Removal of a 'licence to operate' could lead to reduction in the value of the Company's IP & other assets, & financial losses. Unless rectified, this exhibits a potential existential threat.
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>During FY22, ECT integrated ESG - particularly climate-related risks - into the Company's existing ERM process (described in this report), disclosed against WEF ESG Metrics, appointed an ESG Advisor &amp; approved voluntary climate [TCFD] reporting for FY22 (this report).</li> <li>ECT intends to transparently disclose strategy &amp; specific actions it will take to demonstrate stewardship of emerging ESG risks / opportunities to stakeholders, with two-way dialogue encouraged.</li> <li>ECT understands that a consistent and comparable ESG disclosure of financial and non-financial ESG information to stakeholders will likely improve trust, reputation &amp; brand value. 'Best-of-peer' alignment means future Board incentives tied to long-term ESG &amp; climate performance indicators, including net-zero goals.</li> <li>Overall, the Company's R&amp;D plans &amp; business strategy are focussed on the transition to a net-zero world.</li> </ul>
<b>Residual Risk rating</b>	Moderate

<b>TCFD Transition Risk Type</b>	<b>Reputation</b>
<b>Description</b>	Lack of formal engagement with key stakeholders who have influence or impact on ECT's business into the future.
<b>Impacts</b>	<ul style="list-style-type: none"> <li>Negative stigma or stakeholder activism against the fossil fuels sector may cause serious harm to ECT's business in unforeseen ways.</li> <li>Increased community or societal pressure for increased regulation or taxation on fossil fuels businesses could lead to increased regulation, costly disruptions at ECT, supplier or customer facilities &amp; could at worst influence ECT's 'licence to operate'.</li> <li>Perceived exposure or poor climate response may reduce the supply of capital &amp; availability of insurance cover based on perceived exposure, to climate-related risks, rather than actual exposure.</li> </ul>
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	<ul style="list-style-type: none"> <li>During FY22, ECT began identifying stakeholders, recording key issues discussed &amp; analysing the materiality (impact/influence) of each stakeholder &amp; stakeholder issue on ECT's operations.</li> <li>ECT also drafted a formal stakeholder engagement plan &amp; central register to foster two-way engagement between ECT &amp; key stakeholders on an ongoing basis &amp; in to improve the broader operating environment.</li> <li>Implementation &amp; proactive stakeholder engagement is a part of ECT's strategy going forward.</li> <li>ECT's 'best-of-peer' approaches above are intended to increase transparency &amp; attractiveness of ECT to stakeholders over time.</li> </ul>
<b>Residual Risk rating</b>	Medium

Whilst some risks may not emerge immediately and may have medium to long-term impacts, information on these (potential) risks is provided in ECT's inaugural TCFD Report. There is naturally some overlap and interconnectedness between the TCFD categories for ECT since it expects to play an active and important role in the energy transition.

ECT acknowledges the possibility of increased government support to accelerate the early adoption of renewables. However, many logistical and technical barriers to achieving this remain. ECT's low-cost net zero solutions - which are immediately deployable - would likely generate significant revenues in any transition phase to pure renewables. Over time, a portion of revenues achieved in the transition phase is expected to be re-invested to accelerate R&D in complementary technologies further and heighten industry collaboration opportunities.

At the same time, the Company is investing in becoming a 'best-of-peer' ESG Company through transparent disclosure and leadership, including practical solutions to *Paris*, which are intended to increase attractiveness to current and future stakeholders.

Demonstrating a vision to deliver low-cost transition solutions relating to climate change, combined with 'living' these corporate values through setting and attaining early voluntary net zero GHG targets, are anticipated to improve ECT's trust, reputation and brand.

The integration of TCFD into FY22 Annual Reporting and future business strategy - together with an anticipated acceleration in stakeholder engagement - is expected to improve the visibility and attractiveness of ECT's 'best-of-peer' proposition and may attract ESG investors that search for outperformers in all sectors.



## Transition Opportunities

ECT's Purpose is to "bridge the gap between today's use of resources and tomorrow's zero-emissions future" - the Company is positioned to play an important role in the energy transition to a low-carbon and climate-resilient economy.

Outlined in the table below is a summary of potential climate-related opportunities the Company is currently considering.

ECT's opportunities are split into five major categories:

- resource efficiency and cost savings
- the adoption of low-emission energy sources
- the development of new products and services
- access to new markets and building resilience along the supply chain.

As with ECT's risks, future opportunities change over time.

TCFD Opportunity Type	Description	TCFD Opportunities
<b>Products &amp; Services</b>	Increased demand for new low-emissions technologies - COHgen	<p>Short-medium term, syngas is a hydrogen-rich low-emissions source of energy that is utilisable in the national electricity market for peak demand requirements, including supporting the need for gas to fulfill "capacity mechanism" obligations that seek to smooth out Australian energy prices, whilst replacing electricity from higher-emitting lignite.</p> <p>Medium-long-term, the use of hydrogen reflects consumer preferences for low-emissions electricity, with ECT having the potential to supply the national electricity market using hydrogen from the COHgen process at &lt;\$2/kg and with ~70% reduction in CO<sub>2</sub> from conventional methods of production. *</p>
<b>Products &amp; Services</b>	Increased demand for new low-emissions products or technologies - hydrogen derivatives (e.g., formic acid)	<p>Creation of formic acid during production provides a crucial mechanism to transport hydrogen as the importance of hydrogen in the energy mix becomes apparent.</p> <p>Formic acid is also used as an antibacterial agent for livestock feed, with Asia being the largest market.</p> <p>Both applications provide examples of significant opportunities to provide diversified revenue sources to ECT over the long-run, which is further supported by CO<sub>2</sub> that is utilised/removed from the atmosphere, during the production process.</p>

TCFD Opportunity Type	Description	TCFD Opportunities
<b>Products &amp; Services</b>	Increased demand for new low-emissions products or technologies - char for soil health	Potentially company-making technology solution that might counter doubts about fossil-fuels-driven technologies, by eliminating high-cost CCS from the equation in the production soil health inputs, such as Agchar, fertilisers, fungi, bacteria etc. that improve soil quality, & generate future carbon offsets.
<b>Products &amp; Services</b>	Increased demand for new low-emissions products or technologies - char for graphitic carbon & other critical minerals	Scalable & affordable net-zero emissions production of graphitic carbon (& other downstream products from char, e.g., smokeless fuels, metals reductant & battery anode material) could reliably supply battery makers & support EV and grid storage markets, with significant opportunity to contribute to sustainable & diversified revenues over the long-run.
<b>Products &amp; Services</b>	Increased demand for new low-emissions products or technologies - HydroMOR	Low-emissions, low cost, hydrogen-driven technology that could revolutionise primary iron making. HydroMOR is the transition solution to a “green steel” future. A significant opportunity exists for the Company to generate high-margin diversified and resilient revenues.



TCFD Opportunity Type	Description	TCFD Opportunities
<b>Markets</b>	<p>Access to new markets by solving logistical barriers to immediate deployable solutions:</p> <ul style="list-style-type: none"> <li>(i) Higher cost of renewable hydrogen with volume, price &amp; reliability constraints vs. ECT @&lt;\$2/kg;</li> <li>(ii) Lack of enabling infrastructure to make hydrogen viable locally or overseas;</li> <li>(iii) Challenges in adapting existing infrastructure in short-medium term to produce hydrogen;</li> <li>(iv) Cost of hydrogen production using CCS is prohibitively expensive vs. ECT's elimination of CCS;</li> <li>(v) Biomass supply constraints &amp; future eligibility of carbon credits vs. ECT's use of "waste biomass" resulting in soil enrichment through CO2 absorption to mitigate potential loss of future biomass eligibility.</li> </ul>	<p>The hydrogen refinery hub represents a ground-breaking net-zero emissions solution for hydrogen production from lignite &amp; biomass, whilst demonstrating integrated set of applications that consume the bulk of the available waste energy outputs, recycling that energy back into the COLDry process.</p> <p>This project could open multiple markets to the Company, providing significant sources of diversified revenues derived from the economic advantage it possesses through immediate deployment.</p> <p>Deployment could also lead to increased industry collaboration opportunities, locally &amp; internationally. Additional revenues may emerge from the generation of carbon credits in the processes &amp; also through potential demonstration of more efficient modes of transport (hydrogen &amp; EV powered vehicles), providing further diversification benefits &amp; resilience.</p>
<b>Markets</b>	<p>Access to public sector incentives for low emissions technologies - e.g., low-cost hydrogen &amp; steel production, CSIRO, FENEX-CRC &amp; other university funding, R&amp;D Incentive &amp; other govt. initiatives</p>	<p>ECT's low-cost, zero-emissions solutions - derived through ongoing R&amp;D - may be eligible for significant financial support from various State &amp; Federal sources, &amp; may also lead to further industry collaboration, synergies &amp; deeper access to new &amp; emerging markets. This may also contribute to diversification in revenue sources, providing resilience.</p>

TCFD Opportunity Type	Description	TCFD Opportunities
<b>Markets</b>	Investor shift to low-carbon emissions technologies & no CCS	ECT's ability to source future available capital related to low-emissions technologies is likely to be positively correlated to ECT's ability to eliminate CCS, providing a competitive advantage to the Company within this sub-sector, whilst avoiding of 'negative screens' for CCS investment or lending.
<b>Resilience</b>	Reputation/brand & resilience: early adaptation to climate-change risks - voluntary ESG & TCFD disclosures & net-zero GHG targets	<p>Proactive voluntary ESG &amp; TCFD reporting of climate-related risks &amp; opportunities, with achievement of early voluntary GHG-targets, underpins a business aligned to global climate goals &amp; best-of-peer ESG leadership. These transparent attributes may lead to future support from government &amp; capital markets, heightened community engagement &amp; increased employee attraction.</p> <p>Disclosure may also improve business planning &amp; a reduce insurance risk that is based on perceived exposure to climate-related risks, rather than actual.</p>
<b>Resilience</b>	Influence on value chain - suppliers & customers	Where ECT can influence the outcome (especially when it leads by example), this may increase the reliability of ECT's value-chain - & resilience of ECT's cashflows - over the long-run. By having influence over the value-chain, both physical risks & transition risks relating to climate change could be reduced. By extension, this might include potential customers, who are attracted to technologies that off net-zero solutions & in doing so reduce their own emissions & future carbon liability. ECT would also likely benefit from a resultant reduction in Scope 3 emissions.
<b>Resilience</b>	Complimentary renewable solutions through ongoing R&D re-investment	<p>ECT's acknowledges that the transition to a net-zero world may include a shift to renewables over time. The Company's low-cost net-zero solutions have the potential to generate significant revenues in any transition phase, which could be re-invested in technologies that complement renewables, further expanding the Company's technology suite over time &amp; positioning ECT as a future zero emission company, providing potential resilience over the long-term.</p> <p>Possibly areas of immediate interest might include in-situ carbon capture through char production &amp; future eligibility for future carbon credits.</p>



Underpinning the above over the medium-to-longer term is the likely increase in demand for energy in hard-to-abate sectors (e.g., manufacturing / heavy industry), demand from locations with poor access to renewable energy sources due to climatic conditions and/or land constraints, and increasingly binding emission-reduction agendas that are incentivising the acceleration of hydrogen (of any low-emissions type). These opportunities likely lie within the APAC region (e.g., Japan, South Korea, Singapore & China), representing major export opportunities for Australia as a nation.<sup>xvii</sup>

## Impact on business, strategy and financial planning

### Climate-related Risks

ECT assessed several climate risks and opportunities that could ultimately have significant cost, revenue, reputational and associated strategic implications for the Company.

The Company's strategic business planning, risk management strategies and integration of climate change risks and opportunities in our ERM Risk Register and associated oversight process ensure that multiple stakeholders regularly review and assess current, emerging, and longer-term potential climate change risks. Recommended strategic repositioning resulting from this process follows to reduce physical and transition impacts and to take advantage of significant opportunities that are likely to emerge over time. In doing these things, the Company demonstrates the best possible resilience in a rapidly changing operating environment.

Mitigating physical risks to ECT's operations is an important aspect of the Company's strategic planning. As a result, existing BCP's are expected to be augmented with plans to mitigate potential weather-driven impacts, which are likely to become more significant over time. This includes the impacts on our value chain.

The Company has assessed its material climate-related physical risks as posing an inherently *medium* level of risk to the Company, which reduces to *moderate-medium*, following actual or proposed risk mitigation strategies and business planning.

Mitigating transition risks to ECT's operations is inherently more important to the Company than the physical impacts which may be faced. As an R&D company, we are cognisant that the only thing that is constant is change itself. The social, community and technological landscape in which ECT operates has changed significantly in recent times, particularly as it relates to government policy, community expectations and customer preferences relating to climate action.

Whilst the Company has detailed business and R&D plans that suit a particular set of circumstances or outlook at a point in time, we constantly re-check and adapt our business plans, strategy and R&D investment focus to meet the future. The Company is now seeking to mitigate the impact of transition risks through an acceleration of R&D investment in technologies and products that aim to provide low-cost, net zero emissions energy solutions, such as those that utilise hydrogen and eliminate CO<sub>2</sub> from the atmosphere in the production process.

Regarding transition risks, the Company believes that material climate-change-related risks pose an inherently *high* risk to the Company. However, following the execution of risk mitigation strategies and plans, a lower overall residual transition risk rating of *moderate-medium* remains.

A summary of overall material climate-change-related risks faced by ECT is outlined below:

Average Severity (*Material Risks)	Inherent Risk Rating	Residual Risk Rating
Physical Risks	Medium	Moderate-Medium
Transition Risks	High	Moderate-Medium
Total	Medium-High	Moderate-Medium

\*Material Risks = medium or above (inherent) or moderate or above (residual)

On a combined basis, ECT has assessed that climate change risks pose an overall *moderate-medium* risk to the Company after implementing risk mitigation strategies and plans.

### Climate-related Opportunities

On the opportunities side, the Company sees enormous potential in the technological transition to net zero - both locally and globally. ECT's Purpose is to "bridge the gap between today's use of resources and tomorrow's zero-emissions future". We believe that the pursuit of net zero transition opportunities will have strategic, financial and reputational benefits for the Company as an important player in this transition.

The alignment of ECT's corporate GHG footprint to net zero emissions during FY22 (initially via carbon offsetting) is one target met and sets the scene for future net zero ambitions. Through this early signal of our intent, we believe there is an increased likelihood that we can influence our employees, suppliers and customers to take early action on climate change, which may ultimately lead to increased resilience in our value and supply chains over time.

ECT is currently assessing net zero goals for all of our future operations. For example, our proposed Net-Zero Emission Hydrogen Refinery represents a potential ground-breaking net zero emissions solution for hydrogen production from lignite and biomass that solves key technological barriers to low-cost net zero emissions energy whilst demonstrating an integrated set of applications that consume the bulk of the available waste energy outputs, recycling that energy back into our core<sup>xviii</sup> COLDry process. The initial feasibility review indicates a strong commercial potential. As a result, ECT will commence full feasibility for this project to ensure our future submissions for Government funding are powerful, compelling and competitive. We also would expect the project economics and GHG emissions profile to be attractive to equity and debt providers and meet the expectations of consumers, the community, our shareholders and other stakeholders.

### Resilience of the Company's strategy based upon Scenario Analysis

The Task Force believes<sup>xix</sup> that organisations should use scenario analysis to assess potential business, strategic, and financial implications of climate-related risks and opportunities and disclose those to stakeholders since disclosure of forward-looking assessments is important for understanding the vulnerability to transition and physical risks and how vulnerabilities are or would be addressed. In addition, scenario analysis plays a key role in building resilience. A resilient strategy can tolerate disruptions, adapt and grow despite uncertainties in the forward business environment.

During FY22, ECT completed a climate-change scenario analysis to deepen its internal understanding of potential impacts from the risks and opportunities as assessed above. Despite being qualitative, the scenario analysis was useful to help the Company better understand:

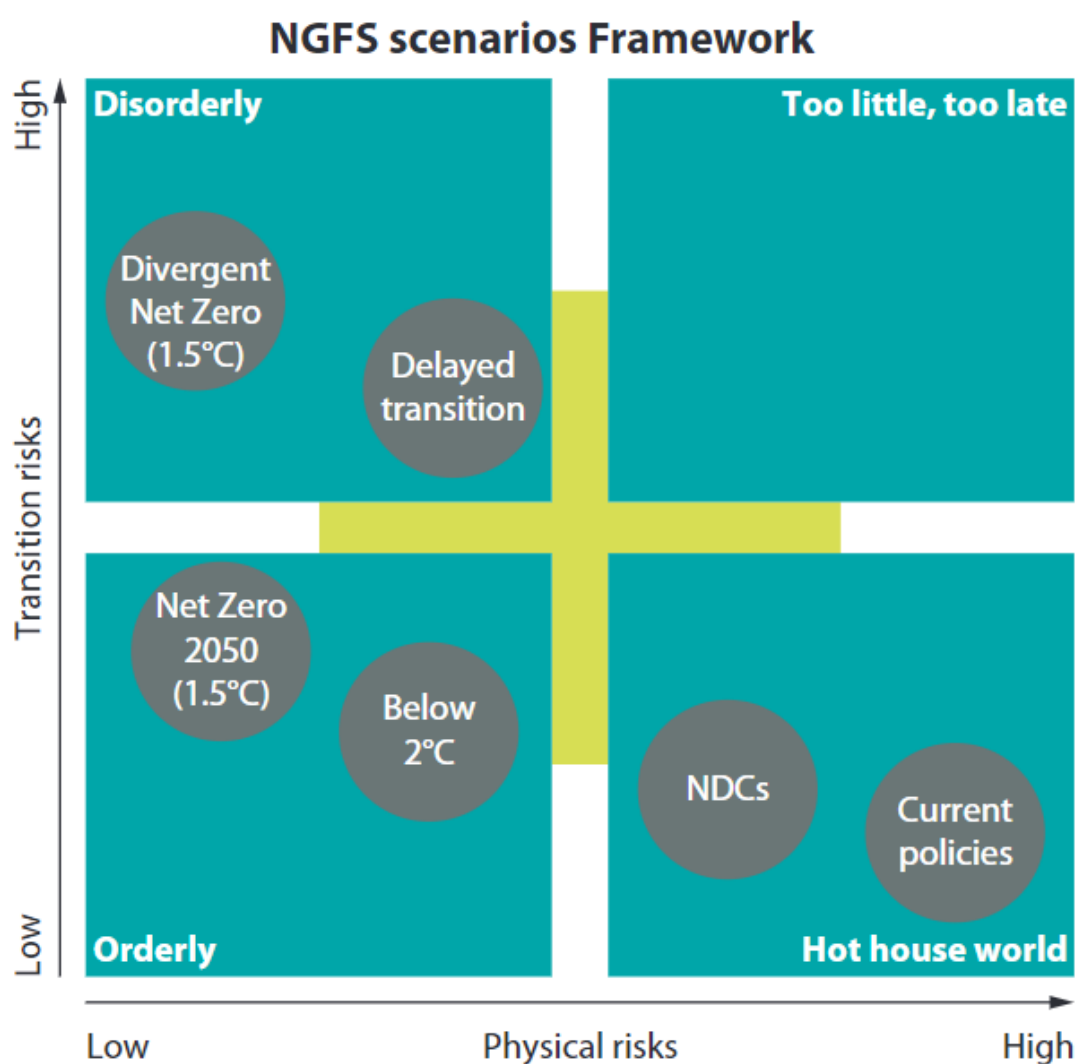
- the timing of physical and transition risks and opportunities.
- the resilience of ECT's strategy and financial plans under different plausible future states of the world, other than in a "business as usual" setting.

- how ECT can position itself to take advantage of opportunities and plan to mitigate or adapt to emerging climate-related risks.
- how the Company is challenging itself to think strategically about uncertain longer-term climate-related risks and opportunities, some of which could be highly disruptive.
- how the Company can adapt strategy and financial plans when it becomes clear that the environment is moving towards a new scenario state or trajectory.

This understanding gives the Company more tools to adapt future strategy and R&D investment decisions and allocate future costs to mitigate potential negative impacts.

## Physical Scenarios

Despite the unpredictability of ECT's future physical exposure to climate change, the Company has assessed physical risks under the *Network for Greening the Financial System's (NGFS) Hot house world scenarios*<sup>xx</sup> that assume some climate policies are implemented in some jurisdictions. Still, globally efforts are insufficient to halt significant global warming. Moreover, these scenarios result in many of the severe physical risks above, some of which are irreversible, e.g., sea level rises. However, these physical risks also exhibit correspondingly lower transition risks (and opportunities).



Source: Page 31, NGFS Climate Scenarios (June 2021)

Within this (bottom right quadrant) *Hot house world* sits all pledged National Determined Contributions ("NDC") and related policies - even if not yet implemented. Australia's pre-existing NDC <sup>xxi</sup> under *Paris*, at the end of FY22, was to reduce Australia's GHG emissions by 26-28% below 2005 levels by 2030. Whilst the former Liberal Government's estimates predicted Australia would beat their original 2030 NDC target, significant pressure from local and international stakeholders to set more ambitious emissions targets that align globally has mounted. The capital markets have been signalling that further action is required from Australia to meet *Paris* - and have, in essence, been leading Australia's climate policy direction.

The election of the Labor government in May 2022 further accelerated this direction. By the second half of June 2022, the new Federal Government had lodged an updated NDC with the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, with a proposed cut to Australia's GHG of 43% below 2005 levels by 2030 <sup>xxii</sup>. By July 2022 (after reporting date), the proposed legislation was before the Australian Parliament.

According to the NGFS Report, observed climate change of 1.2°C has already more than doubled both the global land area and the global population exposed to flood, crop failure, tropical cyclones, wildfire, drought and heatwaves. Global warming of 2°C relative to pre-industrial conditions is also projected to lead to a fivefold increase in exposure to all types of natural hazards globally. <sup>xxiii</sup>

The CSIRO's decadal megatrends report, published in July 2022, warns that extreme weather caused by climate change will cost Australia more than \$39 billion annually by 2050 <sup>xxiv</sup>.

Meanwhile, the latest IPCC Climate Report <sup>xxv</sup> suggests that the planet has already heated up by about 1.1°C - and a rise of 1.5°C could be reached as soon as the early 2030s. So, Australia's NDC and the *Hot house world* scenario appears to be a realistic scenario for the current times – and for the purpose of stressing ECT's assets and future plans under this "business as usual" setting.

## Transition Scenarios

It is also possible that *Hot house world* scenarios do not hold the current course for long, given the accelerated trajectory of climate-change policy around the world, with increasing pressure from stakeholders for further action.

Transition risk scenarios are particularly relevant for resource-intensive organisations with high GHG emissions within their value chains, where policy actions, technology, or market changes aimed at emissions reductions, energy efficiency, subsidies or taxes - or other constraints or incentives - may have a particularly direct effect.

Given ECT has exposure to climate-related risks – and significant climate-related opportunities – in the energy transition, the central scenarios chosen to assess transition risks and opportunities were the *NGFS Orderly* and *Disorderly* scenarios <sup>xxvi</sup>, both of which meet *Paris* (i.e., assume global warming of no more than 2.0°C above pre-industrial levels over the 21<sup>st</sup> century), but get there in different timeframes.

Both these scenarios support an increasing global effort to tackle climate change by 2030, followed by global collaboration that culminates in faster technological responses and behavioural changes to achieve the requisite outcomes. Under these scenarios, there exist more transition risks than physical risks. Both scenarios notably exhibit transition opportunities for ECT's business.

The *NGFS Orderly* <sup>xxvii</sup> scenarios (bottom left quadrant) assume climate policies are introduced early and become gradually more stringent. They assume smooth physical changes in climate over time and that climate policy and technological actions are adopted globally in a coordinated and timely manner. This

pathway attempts to simplify what are otherwise complex development pathways. Both physical and transition risks are relatively subdued in these scenarios that limit global warming to 2.0C or less by 2050.

ECT assessed the *Orderly* scenarios as less likely given the current trajectory of global climate policy, notwithstanding Australia's anticipated acceleration to its NDC targets following recent government change in May 2022.

In the transition risk context, *disorderly* pathways assume variations in the implementation and effectiveness of climate policies globally. They characterise policy delays, lack of coordination and alignment in global policy implementation, and technological, market, legal and social shocks. These disruptions lead to higher transition risks and opportunities.

The *NGFS Disorderly*<sup>xxviii</sup> scenarios (top left quadrant) assume higher transition risks due to delayed or divergent policies across countries and sectors. '*Divergent Net Zero*' reaches net zero around 2050, but with higher costs due to divergent approaches introduced across industries leading to a quicker phase-out of oil use. '*Delayed transition*' assumes annual emissions do not decrease until 2030. Strong policies are needed to limit warming to below 2°C at a later date and might include abrupt and significant increases in carbon prices after a period of delay.

ECT has assigned a higher likelihood that its transition risks and opportunities sit within the *Disorderly* scenarios, with risks – and significant opportunities - attributable to the Company in both scenarios.

Whether in a *Disorderly* or *Orderly* scenario, the Company expects to be positioned to support the transition to a low carbon, climate-resilient economy, both with immediately deployable low-cost technology solutions and from the ability over time to re-invest revenues made in the energy transition into complementary technologies. In essence, we anticipate being able to adapt our strategy and business plans depending on which future pathway we are on, demonstrating the robustness of our business model across a range of possible future states.

Our determination to be a '*best-of-peer*' energy transition company in the face of these future scenarios is intended to position ECT as a resilient agent of change in the transition to a net zero world, increasing our attractiveness to key stakeholders that include capital markets, shareholders, insurers and our value chain alike.





# RISK MANAGEMENT

The ECT Executive, Audit and Risk Committee, and Board assess, oversee, or have responsibility over risks that could significantly impact current and future business objectives, strategy, and long-term cashflows. When monitoring risks, the Company determines what is a material risk on a case-by-case basis by following ECT's ERM framework above and outlined further below.

Risks under consideration at the business level are initially assessed based on the likelihood that each risk could significantly impact the Company. ECT's Audit and Risk Committee monitor and reviews emerging risks (that includes climate risks) as provided by the business or Executive as part of the ERM framework. Following this review process, the Audit and Risk Committee enters material risks on the Company's ERM Risk Register. Generally, this might include risks with a *medium* inherent risk rating or higher, with the business or Executive also monitoring less-material risks for future inclusion on the ERM Risk Register.

The relative significance of climate-related risks versus other business risks is determined in the same way – by probability, impact and the resulting inherent risk rating (i.e., before risk mitigation). However, the probability, time horizons (outlined in the *Strategy* section above) and the potential impact differ. For climate risks, the ERM Risk Register might typically also include risks that are likely to qualitatively influence stakeholder decisions, regardless of the quantitative impact on the business at the current time. There is, in essence, a time value attached to climate risk's inclusion.

A sample illustration of the comparability of climate and business risks is set out in an extract of the ERM Risk register below:

<b>Risk</b>	Cyber Security / Attack
<b>Description</b>	Data / privacy breach / attack: loss of data / loss of access to files /e-mail / confidential information stolen
<b>Consequences</b>	Direct financial losses from loss of key company data and workflow disruption, and indirect loss from compensation or fines (from regulators). Subsequent reputational damage that reduces demand for products and reduces future investment in the Company. Ongoing pending threat of legal actions from customers (data stolen).
<b>Risk Owner</b>	Executive
<b>Probability</b>	Likely
<b>Impact</b>	Very Severe
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	BCP - continuous cloud backup. Office 365. Staff training on cyber security - ongoing

<b>Risk</b>	<b>TCFD Risk - Transition Risk</b> Policy & Legal
<b>Description</b>	Exposure to future litigation
<b>Consequences</b>	Increased costs and/or reduced demand for ECT's products and services resulting from fines and judgments or reputational damage. Increasing exposure of directors to litigation e.g., for non-disclosure of climate risks or non-preparedness.
<b>Risk Owner</b>	A&R, Board
<b>Probability</b>	Possible
<b>Impact</b>	Very Severe
<b>Inherent Risk rating</b>	High
<b>Mitigation Controls</b>	The Company publicly discloses material risks affecting future operations and has begun quarterly ESG disclosure, that include climate change. In May 2022, the Board voluntarily adopted TCFD reporting for its stakeholders - disclosures covering governance, strategy, risk management and metrics & targets relating to climate change - and would seek to implement TCFD recommendations, demonstrating preparedness on climate change risks.

Following due consideration, the Audit and Risk Committee meet to make recommendations to mitigate, transfer, accept, or control each risk that appears on the ERM Risk register – whether climate-related or general business risks.

It then falls to the ECT Board to periodically review material risks and recommendations on the ERM Risk Register. As such, the ECT Board, via and Risk and Audit Committee actively considers climate-related risks and opportunities at the same time and in the same way as assessing all Company-wide risks – and in overseeing, reviewing and resetting ECT's overall strategy.

Finally, the relevant risk owner inside ECT has responsibility for the risks assigned to them and must actively consider and discuss recommendations made by the Audit and Risk Committee, or by the ECT Board, to it. An example of ECT's risk owners (or risk channels) is shown in the table above. In this instance, the operational risk of cyber security has been considered by the Audit and Risk Committee, with ECT's Executive having day-to-day responsibility for managing this risk. In the case of exposure to climate-related litigation, this risk has been considered by the Audit and Risk Committee, with the Audit and Risk Committee and the ECT Board having day-to-day responsibility for managing this risk.

ECT considers the emerging regulatory environment related to current and future climate change risks. The early voluntary adoption of TCFD and the setting of an interim net zero corporate target for FY22<sup>xxix</sup> are two examples of ECT leading its peers in risk management of climate-related risks and generating potential opportunities in Australia's energy transition to net zero. This is further supported by future ECT Board incentives that are intended to be tied to adherence to future GHG emissions targets and other ESG targets.

# METRICS AND TARGETS

Climate-related metrics can measure and monitor exposure and quantifiable progress against climate-related targets over time. These metrics improve the comparability of potential risk-adjusted returns across companies for investors and other stakeholders and the resultant ability of a company to meet future financial obligations, manage, adapt – and even thrive – as the climate changes.

Therefore, this section intends to provide useful information on how the Company's governance, strategy, and risk management process translate to performance over time against the metrics and targets chosen.

In December 2021, ECT committed to an interim FY22 corporate net zero target that included Scope 1, 2 plus limited Scope 3 GHG emissions (to include staff travel and waste). During the March 2022 Quarter, ECT began collating information to measure ECT's GHG emissions for its chosen "baseline", FY19. This year was chosen as it was 'pre-COVID' and reflected ECT's ongoing GHG footprint better.

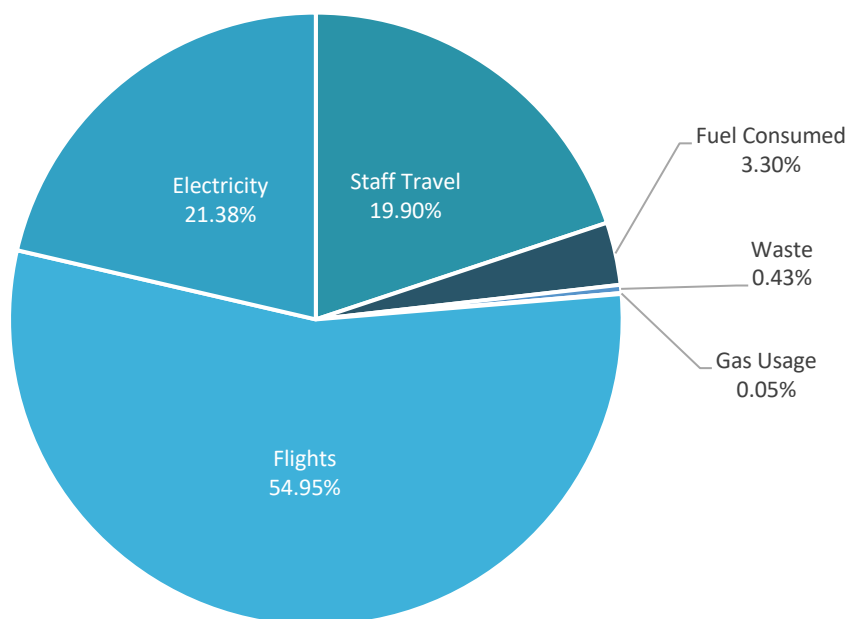
ECT engaged the Carbon Reduction Institute<sup>xxx</sup> (CRI) to undertake this important task. As a result, the Company's baseline GHG emissions were measured and followed the standards outlined by the *World Business Council for Sustainable Development's Greenhouse Gas Protocol Corporate Accounting and Reporting Standard*<sup>xxxi</sup> and the international standard *ISO 14064.1*<sup>xxxii</sup>.

The results of ECT's FY19 baseline GHG Carbon Audit are summarised as follows:

Scope	Emissions Source	Emission (tCO <sub>2</sub> /year)
Scope 1	Fuel Consumed	6.55
	Gas Use	0.10
	Refrigerants	0.00
Scope 2	Electricity	40.70
Scope 3	Supply of Electricity	3.99
	Supply of Gas	0.01
	Staff Travel	41.59
	Assets	0.00
	Expenses	0.00
	Cost of Sales	0.00
	Flights	114.86
	Waste	0.90
	<b>Total Footprint</b>	<b>209.04</b>

Source: Carbon Reduction Institute "Carbon Audit Report – Environmental Clean Technologies FY2019"

It was determined that the total GHG emissions from ECT's relevant corporate operations and activities were 209.04 tonnes of CO<sub>2</sub>e (tCO<sub>2</sub>e) for the FY19 period.



Source: Carbon Reduction Institute "Carbon Audit Report – Environmental Clean Technologies FY2019"

The audit also found that of ECT's total corporate emissions footprint in FY2019, the majority of emissions were a result of flights (55%), followed by electricity (21%), and staff travel (20%).

Following ECT's baseline Carbon Audit for FY19, ECT purchased carbon credits - based on the FY19 results – as a proxy to offset its FY22 GHG emissions, thereby reaching its short-term interim net zero corporate milestones during the FY22 year.

The offsets purchased through the CRI were from projects using methodologies that conservatively quantify emissions reductions through a scientifically valid approach and which meet both the requirements of the Clean Energy Regulator's *National Offset Standard* (NCOS)<sup>xxxiii</sup> and the CRI's own requirements<sup>xxxiv</sup>, which include a reduction of GHG from the atmosphere that would not have otherwise occurred. In addition, the projects themselves must be audited by an independent third party to quantify the amount of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) of greenhouse gas it has saved. Approved projects must also be from *Verified Carbon Standards*<sup>xxxv</sup>, *Gold Standard* projects<sup>xxxvi</sup>, or be *Australian Carbon Credit Units (ACCU)* established under the *Carbon Credits (Carbon Farming Initiative) Act 2011*<sup>xxxvii</sup>.

It is noted that ECT's baseline calculations don't yet outline the Company's full operations or exposure to Scope 3 GHG emissions in the current and future value chain. ECT's Scope 3 emissions boundaries relating to the Bacchus Marsh Project include third-party transport of lignite from Yallourn to Bacchus Marsh and third-party transportation of finished products such as *COLDry* pellets and char from the Bacchus Marsh site to ECT's customers' sites. For the proposed commercial-scale Yallourn Project, there is anticipated to be continued access to the *in-situ* supply of lignite. There is also a potential opportunity to demonstrate hydrogen-powered transport whilst delivering finished product to customer sites, generating a possible reduction in Scope 3 emissions whilst extending ECT's emissions boundaries.

Despite the formative nature of this TCFD Report, another climate-related metric that ECT can immediately report on relates to the amount of R&D (capital expenditure and operational expenditure) attributable to climate change risks and opportunities.

In FY19, this measure for ECT<sup>xxxviii</sup> was:

Total R&D Expenditure (FY19)	\$3,474,991
Total Expenditure (FY19)	\$5,863,788
R&D % of Total Expenditure (FY19)	59.3%

Indeed, as ECT's Purpose is "bridge the gap between today's use of resources and tomorrow's zero-emissions future", we might advocate that *all* of our business expenditure relates to creating solutions in the low-carbon energy transition.

## Future Metrics and Targets

ECT's interim FY22 corporate net zero footprint above is an aligned step along a path to net zero for the ECT Group that includes its projects. ECT's future projects are forecast to avoid GHG emissions in the technology process and generate net zero GHG - and potentially net negative - emissions overall. This is achievable since the COLDry<sup>xxxix</sup> process is a zero-emission lignite drying solution when deployed and integrated with an industrial waste heat source. The downstream processes are also expected to generate low or zero GHG emissions. When using biomass as part of a blended feedstock, the result (under *NGER*<sup>xl</sup> method of carbon accounting) is forecast to deliver a net-negative carbon footprint at ECT's commercial-scale Net-Zero Emissions-Hydrogen-Refinery, based at Yallourn in the Latrobe Valley, and in doing so is currently forecast to generate carbon offsets.

ECT's future GHG emissions targets are as follows:

Greenhouse Gas Target	Target year
Corporate Net Zero (FY22): Scope 1, 2 & limited 3 GHG emissions	Report/Mitigate in FY22
Bacchus Marsh Net Zero: Scope 1, 2 & limited 3 GHG emissions	Report/Mitigate in FY23+
Yallourn Net Zero: Scope 1, 2 & limited 3 GHG emissions	Report/Mitigate in FY23+
Model Net-Zero Hydrogen Refinery: Scope 1 & 2 GHG emissions	Model in FY23/FY24+
Model Total ECT Group: Scope 1, 2 & 3 GHG emissions	Model in FY23/FY24+

From FY23, the Company will also implement sustainability initiatives to initially reduce the Company's corporate GHG footprint and will also consider staff GHG emissions incentives. This will further align the business and its staff to net zero commitments. In addition, it is anticipated that these initiatives will reduce the need to purchase carbon offsets as ECT builds its projects and increase staff motivation as a by-product through higher workforce engagement.

Other climate-related targets – to be modelled (and potentially implemented), might include:

FY23	Transition Risks exposed to climate change (A\$ or % of Total Assets)
	Transition Opportunities exposed to climate change (A\$ or % of Total Assets)
	Executive compensation aligned to climate considerations (A\$ or % of Salary)
FY24+	Revenue from products designed for and utilised in a low-carbon economy
	Metrics on climate-related risks associated with water, energy, land use, and waste management (where material)



## Limitations of this work

- ECT finalised the measurement of FY19 baseline corporate GHG emissions in the June 2022 quarter but did not include a full assessment of Bacchus Marsh for the baseline. This is largely because Bacchus Marsh activities in FY19 do not accurately reflect what Bacchus Marsh looks like in FY22.
- The baseline audit of ECT's GHG emissions does not yet cover any fully operational sites. However, the Phase 2 upgrade to Bacchus Marsh, aimed at delivering an integrated small-scale commercial demonstration of its Net-Zero-Emission-Hydrogen-Refinery (above), is expected to be completed by the end of CY23, subject to supply chain risks present in the economy.
- ECT has not yet measured its FY22 GHG emissions. It is, therefore, not yet possible to provide any historical GHG comparisons. However, comparisons will be possible in future years after ECT has finalised its FY22 Accounts, which allows the FY22 GHG audit to commence.
- ECT's FY22 GHG emissions are expected to include Scope 1, 2 and limited 3 GHG emissions relating to its projects at LTV and Bacchus Marsh.
- ECT has not yet measured Scope 3 GHG emissions across its value chain. The Company is expected to begin this work in FY23/FY24.
- This TCFD report is formative and qualitative in nature, as ECT does not yet have material assets or revenues to flex under various climate-related scenarios and future timelines.

## Next Steps

ECT will continue to focus on R&D activities to remain resilient in the face of the energy transition to a low-carbon economy. The Company believes doing so will benefit all our stakeholders, with significant opportunities on the path to net zero.

In future years, the Company will initially focus on these areas:

ECT Priorities relating to Climate Change Risks and Opportunities	Year		
	FY22	FY23	FY24
Measure ECT's corporate baseline GHG emissions – Scope 1, 2 & limited 3	✓	✓	✓
Offset ECT's corporate GHG emissions – Scope 1, 2 & limited 3	✓	✓	✓
Measure Bacchus Marsh Project GHG emissions – Scope 1, 2 & limited 3	-	Measure	Measure
Offset Bacchus Marsh Project GHG emissions – Scope 1, 2 & limited 3	-	Implement	Implement
Measure Yallourn GHG emissions – Scope 1, 2 & limited 3	-	Measure	Measure
Offset Yallourn GHG emissions – Scope 1, 2 & limited 3	-	Implement	Implement
Model Yallourn Project Net Zero Project GHG emissions – Scope 1 & 2	-	Model	Model
Model Total ECT Group GHG emissions – Scope 1, 2 & 3	-	Model	Model
Align ECT Board incentives to ESG (including GHG) targets	-	Model	Implement
Integrate climate-related risks into Enterprise Risk Management (ERM) process	✓	✓	✓
Update BCP's to take into account physical risks relating to climate change over short, medium and long term (including value chain)	-	Implement	Implement
Secure backup supply agreements to mitigate supply/re-pricing risk	-	Implement	Implement
Increase stakeholder engagement based upon impact/influence (community, capital markets, insurers, suppliers, customers, government & local councils)	-	Implement	Implement
Form strategic partnerships with complimentary technology/university partners to leverage climate-related transition opportunities	-	Implement	Implement
Continuous improvement to ESG disclosure & best-of-peer ESG strategy	-	Implement	Implement
Implement TCFD Recommendations ahead of suggested 3-year timeframe	-	Implement	Implement

ECT looks forward to keeping stakeholders up to date on progress in the years to come.

# References

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- <sup>i</sup> [The Paris Agreement | United Nations \(www.un.org/en/climatechange/paris-agreement\)](http://www.un.org/en/climatechange/paris-agreement)
- <sup>ii</sup> [Mandatory climate-related disclosures | Ministry of Business, Innovation & Employment \(mbie.govt.nz\)](http://mbie.govt.nz)
- <sup>iii</sup> [TCFD mandate: Everything you need to know about the UK's new climate disclosure requirements - edie](#)
- <sup>iv</sup> [COP26: Together for our planet | United Nations](#)
- <sup>v</sup> [U.S. SEC proposes companies disclose range of climate risks, emissions data | Reuters](#)
- <sup>vi</sup> [Executive Order on Tackling the Climate Crisis at Home and Abroad | The White House](#)
- <sup>vii</sup> [Net Zero Coalition | United Nations](#)

More than 70 countries, including the biggest polluters – China, the United States, and the European Union – have set a net zero target, covering about 76% of global emissions. Over 1,200 companies have put in place science-based targets in line with net zero, & more than 1000 cities, over 1000 educational institutions & > 400 financial institutions have joined the Race to Zero, pledging to take rigorous, immediate action to halve global emissions by 2030.

- <sup>viii</sup> [Corporate governance update: climate change risk and disclosure | ASIC - Australian Securities and Investments Commission](#)
- <sup>ix</sup> [cgc-principles-and-recommendations-fourth-edn.pdf \(asx.com.au\)](#)
- <sup>x</sup> [Recommendations | Task Force on Climate-Related Financial Disclosures \(fsb-tcfd.org\)](#)
- <sup>xi</sup> [Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures \(fsb.org\)](#)
- <sup>xii</sup> [ESG - ECT \(ectltd.com.au\)](#)
- <sup>xiii</sup> [Explore the Metrics > Measuring Stakeholder Capitalism | World Economic Forum \(weforum.org\)](#)
- <sup>xiv</sup> [ESG - ECT \(ectltd.com.au\)](#)
- <sup>xv</sup> [ESG - ECT \(ectltd.com.au\)](#)
- <sup>xvi</sup> Page 8, [FINAL-2017-TCFD-Report.pdf \(bbhub.io\)](#)
- <sup>xvii</sup> [Investor-Group-on-Climate-Change-Hydrogen-Report.pdf \(igcc.org.au\)](#), page 7
- <sup>xviii</sup> [COLDry - ECT \(ectltd.com.au\)](#)
- <sup>xix</sup> [The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities - TCFD Knowledge Hub \(tcfdhub.org\)](#)
- <sup>xx</sup> Page 7-9, NGFS Climate Scenarios (June 2021) [NGFS Climate Scenarios for central banks and supervisors | Banque de France](#)
- <sup>xxi</sup> Page 3, [Australia Nationally Determined Contribution Update October 2021 WEB.pdf \(unfccc.int\)](#)
- <sup>xxii</sup> [Australia submits new emissions target to UNFCCC | Department of Industry, Science and Resources](#)
- <sup>xxiii</sup> Source: Page 31, NGFS Climate Scenarios (June 2021) [NGFS Climate Scenarios for central banks and supervisors | Banque de France](#)
- <sup>xxiv</sup> [Our Future World - CSIRO](#) July 27, 2022.
- <sup>xxv</sup> [IPCC climate report: Adapt now or face an unliveable future | World Economic Forum \(weforum.org\)](#)

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<sup>xxvi</sup> Page 7-9, NGFS Climate Scenarios (June 2021) [NGFS Climate Scenarios for central banks and supervisors | Banque de France](#)

<sup>xxvii</sup> Page 7, NGFS Climate Scenarios (June 2021) [NGFS Climate Scenarios for central banks and supervisors | Banque de France](#)

<sup>xxviii</sup> Page 7, NGFS Climate Scenarios (June 2021) [NGFS Climate Scenarios for central banks and supervisors | Banque de France](#)

<sup>xxix</sup> [ESG - ECT \(ectltd.com.au\)](#)

<sup>xxx</sup> [Home - NoCO2](#)

<sup>xxxi</sup> [The GHG Protocol \(wbcsd.org\)](#)

<sup>xxxii</sup> [ISO - ISO 14064-1:2018 - Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals](#)

<sup>xxxiii</sup> [National Carbon Offset Standard \(cleanenergyregulator.gov.au\)](#)

<sup>xxxiv</sup> [Carbon Offsets - NoCO2](#)

<sup>xxxv</sup> [Verified Carbon Standard - Verra](#)

<sup>xxxvi</sup> [Carbon Markets | The Gold Standard](#)

<sup>xxxvii</sup> [Australian carbon credit units \(cleanenergyregulator.gov.au\)](#)

<sup>xxxviii</sup> Source: ECT Company data.

<sup>xxxix</sup> [COLDry-Detail - ECT \(ectltd.com.au\)](#)

<sup>xl</sup> [National Greenhouse and Energy Reporting NGER \(cleanenergyregulator.gov.au\)](#)

Although future projects will be measurable under the GHG Protocol, ECT will also report emissions to the Clean Energy Regulator to meet the requirements of Australia's National Greenhouse and Energy Reporting (NGER) Act 2007.