

Climate Change: the commercial implications for Mirvac

Context

There is no doubt that the world's climate is changing, and at Mirvac, we recognise the growing physical and financial risks that climate change presents, both to our assets and our business operations. As average temperatures continue to rise, and as the frequency and intensity of extreme weather-related events increases, we can expect to see a higher incidence of construction delays, damage to property, losses in productivity, impacts to our supply chain, increases in energy, water, and insurance costs, as well as interruptions to the delivery of services. In response, we are placing an increased emphasis on developing strategies to address and mitigate climate change risks, and we are committed to communicating these transparently.

As a company that aims to be a force for good and as a business with purpose, we choose to be part of a global cohort that is addressing climate change, improving transparency to aid decision-making, and demonstrating that sustainability is essential to the long-term survival of our business.

Qualitative scenario

Let's start by taking a look at 2030.

With average temperatures steadily increasing, it's expected that extreme heat days will become a more common occurrence. As well as the broader impacts this will have, rising temperatures will have a tangible impact on Mirvac's activities. This includes an increase in heat-related delay and fatigue on our construction sites, and higher costs to maintain comfort conditions in our existing buildings.

Another key factor is water. Already the driest, inhabited continent on Earth, Australia is expected to receive decreasing rainfall in the areas where Mirvac operates, making drought more prevalent. This is likely to have a negative impact on the water supplies required to operate our assets, especially in our masterplanned communities and precincts where extensive green spaces require irrigation. In addition, changing weather patterns will increase the likelihood of storms and extreme rainfall, posing a number of risks to our portfolio.

This picture could be very different, depending on what Mirvac does.

Controlling carbon emissions is a critical step

In 2014, we set a target to reach net positive carbon by 2030, and in June 2019 we released Planet Positive, our plan for how we intend to reach this. The key steps we will take to reduce our carbon emissions, and ultimately eliminate them, include continuing to maximise energy efficiency and developing all-electric buildings powered by 100 per cent renewable energy. Not only is this good for the environment, it's also commercially sustainable. Our view remains that the cheapest tonne of carbon is the one we don't emit.

In addition to this, we have a number of initiatives across the business that we believe will make a difference, such as our House with No Bills prototype in Cheltenham, VIC, which has been designed to reduce a reliance on electricity to the point that the home will not generate any energy bills.

We're also piloting new solar technology at an apartment project in Doncaster, VIC that makes solar energy more affordable and more accessible for those living in multi-metered buildings.

Other measures we are taking include the integration of green roofs into urban buildings, which help to offset the urban heat island effect; using prefabricated building technology to save on waste and energy output; and improving the environmental performance of the assets across our investment portfolio, which now boasts four 6 Star Green Star Performance rated buildings, along with three 6 star, two 5.5 star and six 5 star NABERS Energy rated buildings.

We will also be taking steps to improve our acquisition and development processes by identifying climate risks early, helping us to design and build better.

Responding to the Task Force on Climate-related Financial Disclosures (TCFD)

The TCFD has provided a framework for companies like Mirvac to develop more effective climate-related financial disclosures through existing reporting processes. We are committed to these disclosures and expect that the depth and quantification of our risks will develop over the next several years.

We have taken a number of steps to inform this report, including an independent gap analysis on our ability to manage climate risk, a significant internal engagement program to bring about alignment on why this is important, and a Group-wide internal climate risk review undertaken with key leaders to develop a three-year plan.

Under the TCFD framework, we are asked to report on four key areas: Governance, Strategy, Risk Management, and Targets and Metrics. We have structured this document accordingly so our stakeholders can gain a greater understanding of how we view the commercial implications of climate change – and what we are doing in response.

Governance

Board oversight

Our Board of Directors takes overall accountability for the management of climate change risks and opportunities, with support from Mirvac's Executive Leadership Team (ELT). They are equipped with the capabilities and credentials to understand and manage the impacts of climate change to our business, and are responsible for approving all of Mirvac's sustainability targets and strategies, which remain focused on climate change resilience and to the decarbonisation of our portfolio.

The Board of Directors also bears overall responsibility for Mirvac's risk management framework and is responsible for decisions in relation to strategies and key risks. In turn, this authority has been delegated in part to the Audit Risk and Compliance Committee (ARCC), which helps the Board to meet its risk management and compliance obligations.

The ARCC meets quarterly, issuing quarterly risk reports that cover risk culture, risk appetite framework, strategic risk profile and heat map, and emerging or notable risks, including those related to climate. In addition, it reviews management's recommendations on risk, and makes decisions regarding risk appetite, risk strategy and risk profile.

We are committed to the ongoing development and maintenance of Board and management climate capability and each year send a delegation comprised of directors, executive, and managers to participate in the University of Cambridge sustainability leadership programs. A Mirvac director is a member of the faculty of this educational program, and we also invited another member of the faculty, a climate science academic, to present to all Mirvac employees and directors in 2019.

The role of Management

Stewardship of sustainability at Mirvac does not stop at Board level – it is integrated at every level of our company. Our ELT plays a crucial role in delivering on our sustainability strategy, *This Changes Everything*, working with the Board to ensure that material risks, controls and thresholds are communicated and adhered to. Every member of the ELT has specific responsibilities relating to Mirvac's sustainability performance, including objectives related to climate-related risks and opportunities. The ELT is also responsible for the implementation of the Mirvac Risk Management Policy & Framework.

Supporting the ELT is the Health, Safety, Environment & Sustainability (HSE&S) Committee, which comprises senior managers from across the business and is chaired by Mirvac's Head of Culture & Reputation. The committee meets every month to review Mirvac's progress on HSE&S matters, including climate change, reporting back to the ELT and Board quarterly with updates and recommendations.

As one of Mirvac's strategic objectives, sustainability also forms part of each employee's short-term incentive calculation (performance bonus). This provides powerful motivation for all employees, including management and the Board, to deliver on the Group's sustainability key targets, of which climate change is one. One tangible measure we have introduced to assess performance is the sustainability scorecard, which allows each business unit to take actions aligned with their impacts and capabilities, and demonstrate their progress.

Strategy

Mirvac's climate-related risks and opportunities

When it was launched in 2014, our sustainability strategy, *This Changes Everything*, highlighted the importance of tackling climate change, with Mirvac setting an industry-leading target to be net positive carbon by 2030. Our net positive carbon commitment signalled to investors that in a 2-degree Celsius carbon budget scenario, Mirvac's exposure to regulatory and market risk is likely to be low. While it has not been developed in accordance with the science-based target (SBT) standard, we believe our plan is more ambitious than an SBT in both scope and timing.

In June 2019, we published Planet Positive, our peer-reviewed plan which sets out how we intend to reach this target. Our key steps include:

1. Continuing to maximise energy efficiency
2. Building all-electric buildings
3. Powering our buildings with 100 per cent renewable energy
4. Investing in a small number of high-quality offsets.

We'll do this while being mindful that we need to balance our environmental and commercial requirements. Our plan also includes performance data projected against our targets, showing our likelihood of achieving our goal.

Climate change is also now explicitly featured in the future-proofing strategies of each business unit as we work towards building a more resilient business.

In addition to switching to renewables, our most significant climate-related opportunity lies in our ability to design, construct and manage resilient, high-performing, carbon-positive buildings across all our business units – which, because of our integrated approach, we are uniquely positioned to do.

Through projects such as Bay Centre, The Fabric, and the House with No Bills, we have already demonstrated how our assets can deliver cost savings and greater customer value, in addition to enhanced environmental outcomes. At our multi-award winning EY Centre, for instance, we achieved a 5.5 star NABERS Energy rating which is half a star above our original design target of 5 stars. The half of a star improvement alone represents a saving in energy costs of almost \$200,000 per year, as well as a \$4 million uplift in valuation.

We also recognise that there are a number of risks that climate change presents to our business. The table below sets out the specific climate-related risks and opportunities that we see impacting Mirvac, along with our initiatives and mitigation strategies.

Region term location	Australia – short term out to 2030 portfolio	Australia – long term out to 2090 and 2100 portfolio	Potential impacts	Potential adaptation and mitigation strategies
Rainfall	In most locations, there is likely to be natural variability in rainfall. There is a high likelihood of a reduction in rainfall during winter in Melbourne, as well as lower annual rainfall in Perth (up to -15%) in both winter and spring.	Winter rainfall is expected to decrease in all locations. Perth is also showing a decrease in annual and spring rainfall. Canberra is showing a warm season variable depending on modelling. In Melbourne, spring rainfall shows a higher reduction by 2090 and high emission scenario, with autumn rainfall also likely to decrease. Rainfall in Sydney and Brisbane remains uncertain.	Construction: Inadequate water to service developments will impact project feasibilities. Water prices and costs will increase, and there will be increased water restrictions for landscape watering in droughts. Higher electricity costs are also expected due to insufficient water for power stations.	Construction: Design and build water efficient buildings and utilise drought tolerant plants for landscaping; greater utilisation of pre-fabricated construction materials to minimise external environmental impacts. Property assets: improve efficiency of water usage, develop alternative water supplies and use recycled water.
Temperature	Average temperatures will continue to increase in all seasons. For all locations and emission scenarios, annual averaged warming is projected to be around 0.4 to 1.3°C above the climate of 1986–2005.	Average temperatures will continue to increase in all seasons. For all locations and emission scenarios, annual averaged warming is projected to be around 0.4 to 1.3°C above the climate of 1986–2005.	Construction and property assets: Higher electricity demand in summer, leading to peak costs and consumption; in addition, there is a greater risk of blackouts, leading to construction and business interruptions; there will also be a higher chance of loss from heat related fatigue and a higher risk of accidents.	Construction: Invest in energy efficiency opportunities Property assets – retrofit existing assets with an improved building thermal envelope (insulation, double glazing, low-e windows), energy efficient lighting and office equipment, energy efficient HVAC.
Extreme temperature	There is expected to be a substantial increase in the temperatures reached on hot days, the frequency of hot days, and the duration of warm spells (very high confidence). Frost risk days (minimum temperatures under 2°C) are projected to decrease.	A substantial increase in hot days (and higher temperatures) and warm spells is projected with very high confidence. In Sydney and Brisbane, it is expected there will be 2 to 3 times more days above 35°C by late in the century. Fewer frosts (minimum temperatures under 2°C) are also projected.	Construction and property assets: Higher electricity demand in summer, leading to peak costs and consumption; in addition, there is a greater risk of blackouts, leading to construction and business interruptions; there will also be a higher chance of productivity loss from heat related fatigue and a higher risk of accidents.	Construction: Invest in energy efficiency opportunities; greater utilisation of pre-fabricated construction material to minimise external environmental impacts. Property assets: Retrofit existing assets with an improved building thermal envelope (insulation, double glazing, low-e windows), energy efficient lighting and office equipment, energy efficient HVAC.

Region term location	Australia – short term out to 2030 portfolio	Australia – long term out to 2090 and 2100 portfolio	Potential impacts	Potential adaptation and mitigation strategies
Extreme rainfall and drought	Heavy rainfall intensity is projected to increase (despite mean annual decline), although the magnitude of change cannot be confidently predicted at this stage. The time spent in drought is projected to increase.	Heavy rainfall intensity is projected to increase (despite mean annual decline), although the magnitude of change cannot be confidently predicted at this stage. It is expected the intensity of extreme rainfall events will increase, as will time spent in drought.	Construction: More construction delays and an increased risk around completion targets; increased construction costs associated with additional site flood mitigation measures; increased insurance costs; damage to construction equipment. Property: Extreme rainfall could lead to: damage to property and assets; business interruption to customers; increased insurance costs.	Construction: Enhance design and construction standards; implement flood defence measures such as pumping equipment and backup generators and ensure effective stormwater management; ensure cranes and other construction equipment are secured or temporarily taken down. Property assets: Retrofit existing assets to improve resilience to extreme rain and hailstorms where appropriate; proactively check and fix leaking roofs; implement effective stormwater management strategies.
Coast	Mean sea level will continue to rise and the height of extreme sea-level events will increase. By 2030 the projected range of sea-level rise is 0.07 to 0.19 metres above the 1986–2005 level.	Mean sea level will continue to rise and the height of extreme sea-level events will increase. By 2090, the highest rises are expected in Sydney. In an intermediate emissions case (RCP4.5), a rise of 0.27 to 0.65 metres is expected. In a high emissions case (RCP8.5) a rise of 0.39 to 0.88 metres is expected.	Construction: Higher sea levels are likely to lead to: an increased restrictions on building approvals for development projects on land one metre or less above sea level; increased costs and delays to construction. Property assets: Higher sea levels could lead to: flooding and damage to property; increased costs in flood prevention; business interruption to customers; reduced land value.	Construction: Avoid building on land one metre or less above sea level; design and build so building materials can be recovered and reused if dismantled; consider temporary builds that can be dismantled. Property assets: Develop a retreat for existing stock built 1.5-2 metres above sea level; invest in flood prevention infrastructure.
Other: fire	There will be a harsher fire weather climate, although the magnitude of change remains uncertain due to significant uncertainties in rainfall projections.	There will be harsher fire weather climate, although the magnitude of change remains uncertain due to significant uncertainties in rainfall projections	Construction: A higher incidence of fire is likely to lead to: building restrictions in prone fire regions; difficulties in gaining insurance; damage to construction equipment. Property assets: Damage to property and assets, business interruptions to customers, electricity supply disruption, increased insurance costs.	Construction: Plan future construction in low bushfire-risk regions; employ best practice bushfire building codes; build appropriate fire breaks; reduce bushfire fuel loads around construction sites; work with Rural Fire Services. Property assets: Retrofit to improve resilience to bushfires; review current fire breaks; reduce bushfire loads around property.

Sources: Assessing Climate Change Risks and Opportunities for Investors: Property and Construction Sector, Report by Dr Michael H Smith, Australian National University.
Climate Change in Australia: www.climatechangeinaustralia.gov.au

Risk Management

How Mirvac identifies, assesses and manages climate-related risk

Mirvac's Group Risk Team is responsible for developing and facilitating the Risk Management framework, advising the business on risk management and consolidating risk reporting to senior executives, the ARCC and the Board. Each business unit is ultimately accountable for its specific risks, including risks related to climate, and is expected to actively manage and report on risks, implement risk management initiatives, and use appropriate processes, procedures and controls to maintain compliance. Our approach to risk management is aligned with ISO 31000 (previously AS/NZS 4360) and guided by ASX Corporate Governance Principles and Recommendations, regulatory standards and Mirvac's own codes and policies such as our Code of Conduct.

The Group Risk team continuously liaises with all levels of the organisation, across projects and asset management teams to ensure risks are appropriately identified, assessed, treated and monitored. Existing and emerging regulatory requirements related to climate change are incorporated into overall risk management, risk registers and risk reporting. Environmental and sustainability risks are classified as a key strategic risk and reported on quarterly to the ARCC.

Climate-related risks are also considered throughout the development and asset ownership lifecycle. When we look to acquire assets or land for development, climate resilience and the management of climate-related risks and opportunities are integrated into the project development plan.

In the future, we will look to assess climate-related risk and opportunities in our investment portfolio against the following criteria:

- potential impact on asset performance and achievement of sustainability targets, particularly emission reduction targets
- financial impact
- location/geography
- overall risk to portfolio value and revenue.

We are also working to standardise our approach to integrating our climate-related risks and opportunities associated with all properties as part of our strategic asset planning process. Our intention is to further integrate climate change considerations into our existing processes to strengthen climate change risk management as a whole. This year, for example, Mirvac held a series of workshops across the business to better understand how climate risk is currently considered in our decision-making processes. Through these workshops, we've identified opportunities to strengthen our approach to climate change risks by developing a consistent method of assessing and managing climate resilience across the Group.

Targets and Metrics

Progress to date

Progress on all Mirvac's climate-related targets is reported each month to our HSE&S Committee, forming part of the sustainability scorecards that contribute to our employee performance incentives.

Since *This Changes Everything* was introduced in 2014, Mirvac has measured emission intensity, water intensity and emission reduction (with breakdowns for office and retail portfolios). We have reduced our carbon emission intensity by 21 per cent and our water intensity by 22 per cent, exceeding our target to achieve a 20 per cent and 15 per cent reduction respectively by 2018. Following a strategy refresh in 2018, we have taken the opportunity to update our baseline year from 2013 to 2018.

The table below shows the sustainability outcomes we have achieved between 2013 and 2019.

GHG Emission (tCO ₂ -e)	FY13	FY16	FY17	FY18	FY19
Total Scope 1	7,066	6,179	4,640	6,828	6,623
Total scope 1 & 2	78,492	82,772	83,790	80,600	84,664
Total Scope 3	25,970	25,603	23,627	21,525	22,829

Total Water Usage (kL)	FY13	FY16	FY17	FY18	FY19
Retail	492,216	470,430	527,127	485,976	493,605
Office & Industrial	349,597	434,247	474,154	453,826	488,298
Total	841,813	904,677	1,001,281	939,802	981,903

Shifting to a more absolute measure

Intensity metrics are useful for evaluating the energy, emissions and water efficiency of real estate portfolios, and have enabled us to drive decarbonisation and improve performance across our portfolios. We recognise, however, that to effectively tackle climate change our total absolute emissions must go down.

For this reason, when we released Planet Positive in June 2019, we highlighted a change in our metrics and we will now be focusing on absolute emission reduction. In addition to our long-term goal, Planet Positive details a set of well-defined, measurable short-term targets that are closely tied to Mirvac's business planning and performance monitoring.

Planet Positive plan sets out the targets and metrics for measuring progress between now and 2030. These cover the majority of our scope 1 and 2 emissions.

In scope: currently, our commitment to be net positive carbon applies to our investment portfolio and state offices. We're counting Mirvac's scope 1 and 2 greenhouse gas (GHG) emissions from these assets, wherever we have operational control. This is because we have a direct ability to impact energy and refrigerant use and their associated emissions and means that we are reporting scope 1 and 2 GHG emissions for the majority of our office and retail assets.

This approach aligns with our current reporting obligations under the Australian Government's National Greenhouse and Energy Reporting (NGER) legislation.

Out of scope: at this stage, scope 1 and 2 emissions associated with our vehicle fleet and our development activity where we have operational control have not been included in our net positive roadmap calculations. These emissions account for around 3 per cent of our total scope 1 and scope 2 emissions.

Scope 3 emissions (such as those associated with things like business travel, employee commuting and energy distribution) are also not part of this plan. We recognise the holistic importance of these, however, and we will continue to collaborate with our supply and value chains to help reduce these emissions. Due to the lease structures we have in place at our industrial assets and wemanagement structures at several office and retail assets, we do not have operational control of these assets. These emissions are considered scope 3 and outside the boundaries of this plan.

The role of renewables

In the context of climate, one of our most significant targets is related to the installation of renewable energy across our investment portfolio. In 2014, we made a commitment to install 1MW of renewable energy by 2018 and were proud to achieve this ahead of schedule. One of the initiatives that made this possible was the creation of our own energy company, Mirvac Energy, through which we are now able to generate and sell energy to our own assets.

We also recognise that it is important to enable renewable energy on assets where we do not retain operational control. As such, we continue to investigate how we can install solar on suitable industrial assets, as well as on new residential developments, and we report our progress each year through Mirvac's Annual Report.

NABERS and Green Star ratings

Traditionally, NABERS and Green Star ratings have been an important independent measure for property companies like ours, and while our focus has broadened, we still have NABERS and Green Star targets. Currently we are targeting 5.5 star NABERS Energy and 4.5 star NABERS Water design and operational ratings for all Office & Industrial assets. We are also targeting 5 Star Green Star Design and As-Built ratings for all new developments.

NABERS energy average rating: **5.05 stars** | NABERS water average rating: **3.86 stars** | Portfolio Green Star rating: **3 stars**

Water and waste

We have also made commitments to reach net positive water and zero waste to landfill by 2030. We report on our progress annually, and will release roadmaps for each of these commitments in FY21 and FY20 respectively.

What's next?

In FY20, and in line with the TCFD framework, we will be undertaking quantitative scenarios. We will also refine the financial impact that climate change has on Mirvac to ensure we are focusing on the material climate-related risks and opportunities for our business, and integrating these into our strategies, systems and processes.

Having released our plan to reduce carbon emissions by 2030, our goal now is to strengthen our approach to climate resilience across the business and ensure that we have consistent method of assessing and managing climate-change risks and opportunities.