

# The Built Environment, Climate Resilience & Finance

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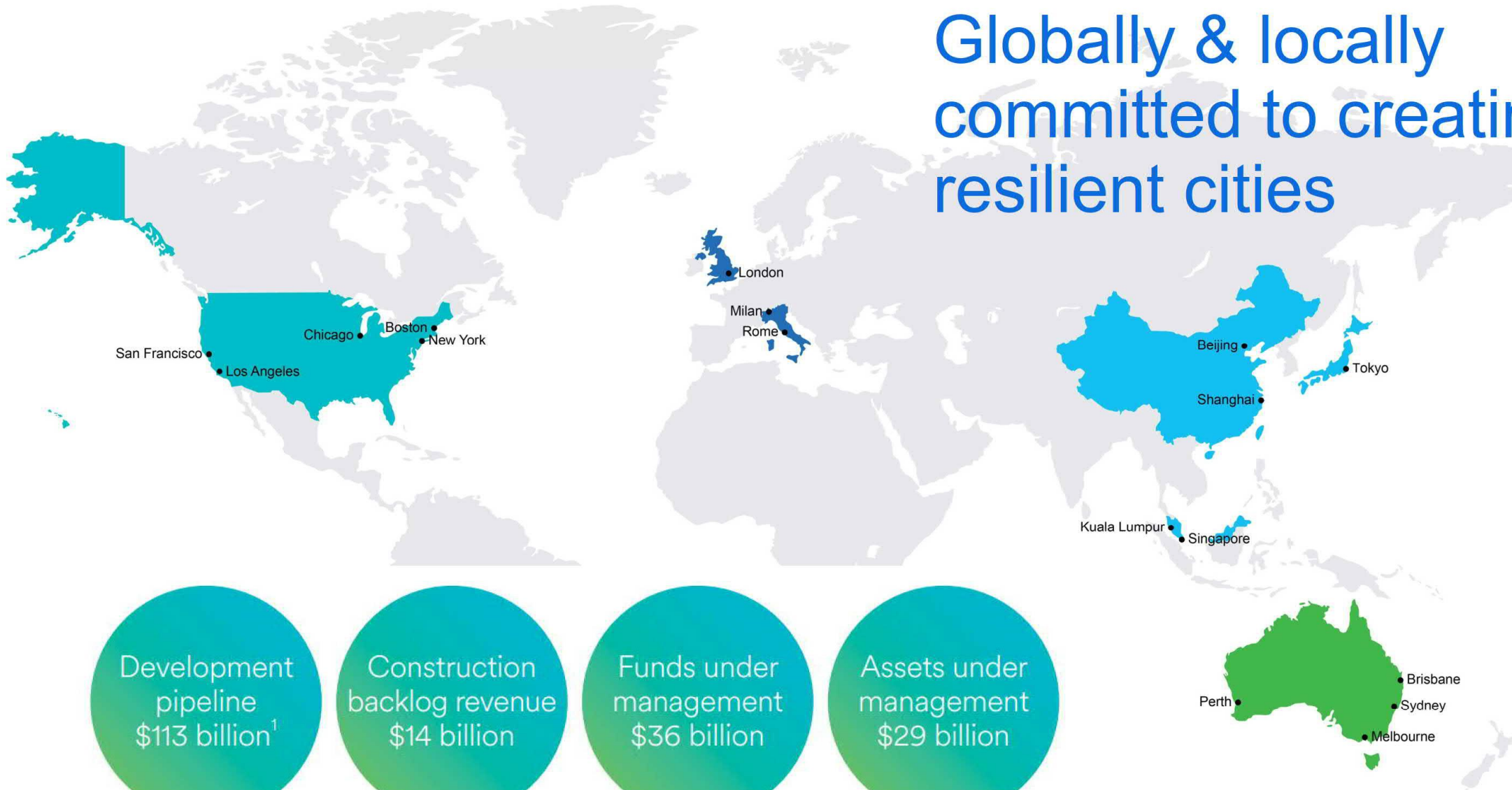
# Agenda

Built Environment, Climate Risk  
& Finance

1. Targets
2. Governance
3. Measurement
4. Responsible Investment
5. Green Finance
6. Decarbonising Construction
7. Resilient Development
8. Sustainable Asset  
Management



# Globally & locally committed to creating resilient cities



Development pipeline  
\$113 billion<sup>1</sup>

Construction backlog revenue  
\$14 billion

Funds under management  
\$36 billion

Assets under management  
\$29 billion

# Our Future

By 2050, **70%** of global population will live in cities.

And **60%** of new urban settlements are yet to be built.

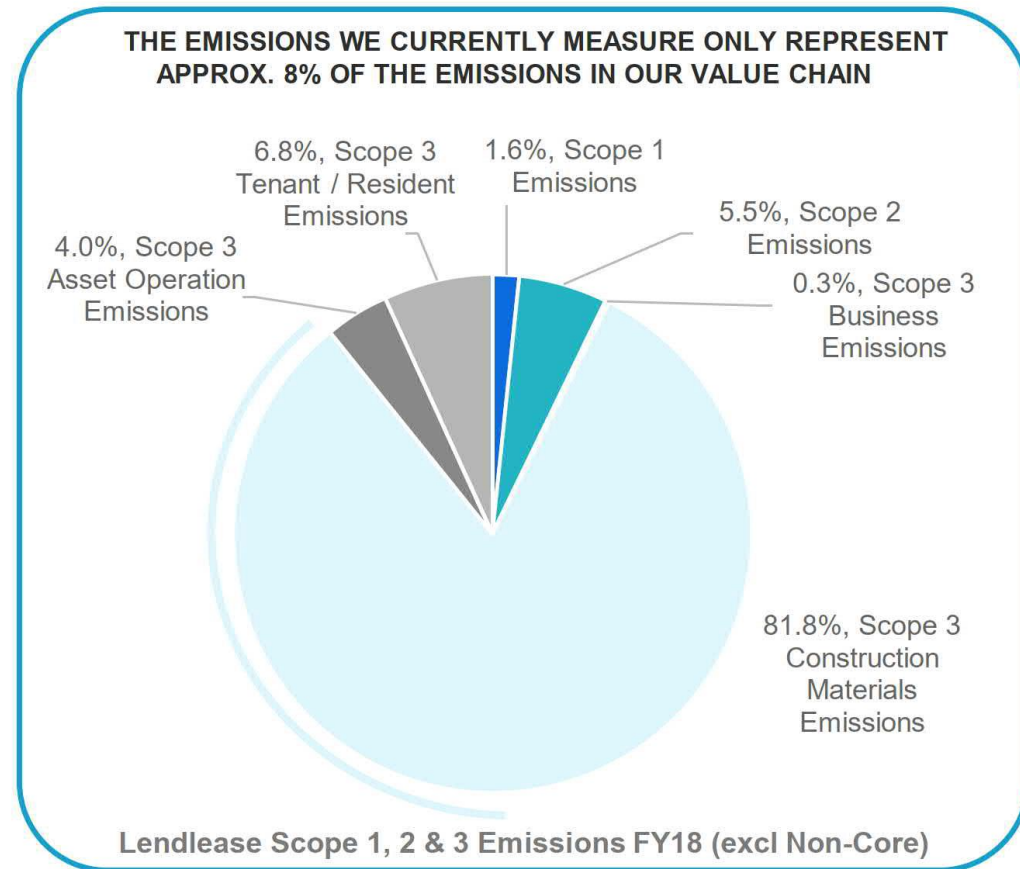
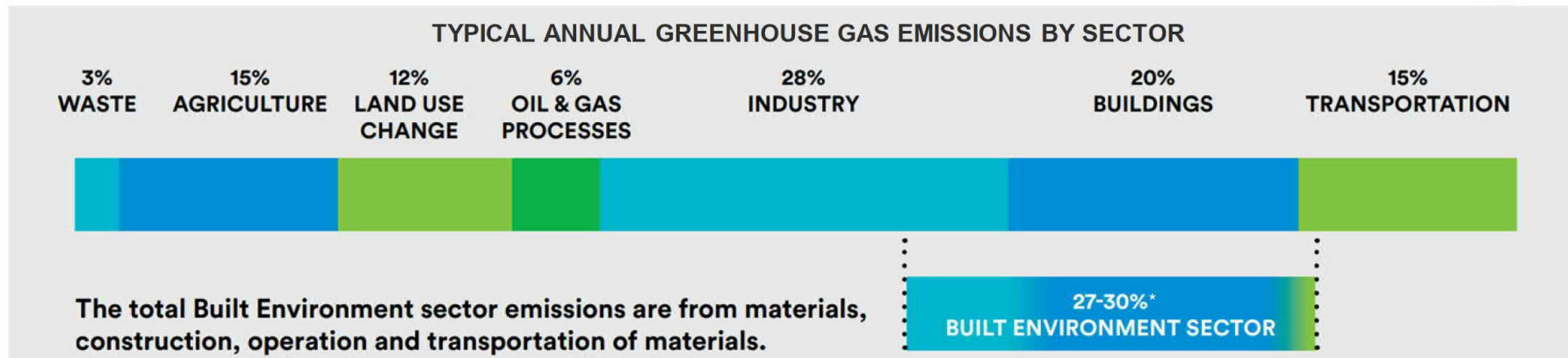
What we create today will still be here in **2080**



# Built Environment & Climate Risk

Building and construction are responsible for 39% of all carbon emissions in the world, with operational emissions accounting for 28%.

The remaining 11% comes from embodied carbon emissions, or 'upfront' carbon that is associated with materials and construction.



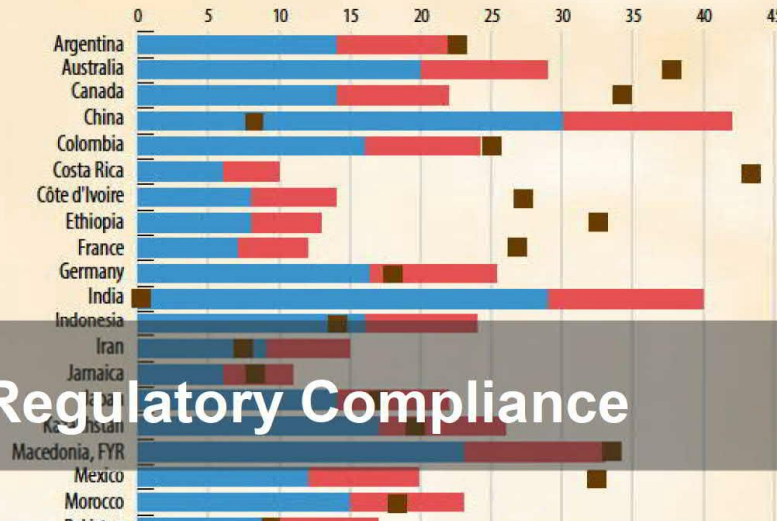
# A New Normal?

Extreme Weather



Chart 1  
Effect of carbon pricing

A \$35 per ton tax on carbon emissions is easily sufficient for some countries to meet Paris mitigation pledges but others need much higher prices.



Regulatory Compliance

Clients & Partners



## Final Report

Recommendations of  
the Task Force  
on Climate-related  
Financial Disclosures

Industry & Benchmarking

Supply Chain & Resources



Investors & Insurers



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# Set Bold Targets

Set clear and measurable targets that are relevant to your organisation's material impacts and core business.

Articulate your targets internally and externally in a language that is digestible to key stakeholders.

Be transparent. It's about sharing the journey.



WE ARE A  
**1.5°C**  
ALIGNED  
COMPANY

NET ZERO CARBON  
SCOPE 1&2 BY 2025  
ABSOLUTE ZERO  
BY 2040

## Net Zero Carbon by 2025 (Scopes 1&2)

The reduction of greenhouse gas emissions from business activities as far as possible, with the remainder offset with an approved carbon offset scheme

## Absolute Zero by 2040

The mitigation of all greenhouse gas emissions produced from business activities to absolute zero. Our absolute zero target applies to scope 1, 2 & 3 emissions.



GREENHOUSE  
GAS PROTOCOL

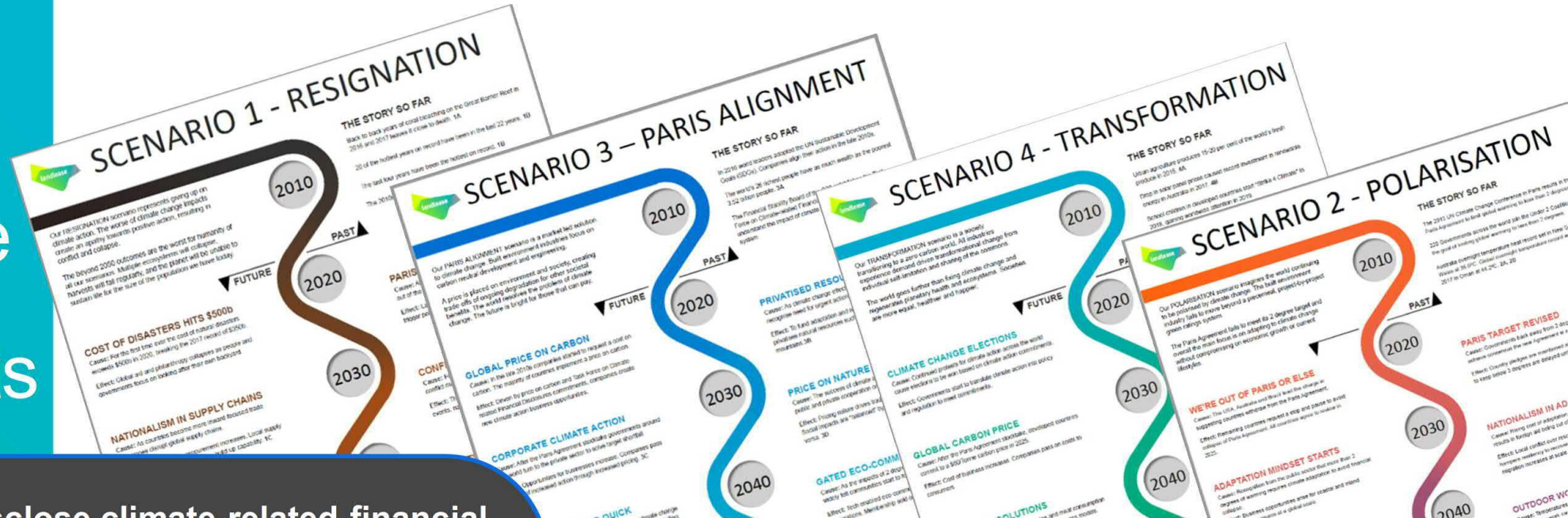
**Scope 1**  
*Fuels we burn*

**Scope 2**  
*Electricity we use*

**Scope 3**  
*Goods & materials we buy/activities we facilitate*

*Defined by International Greenhouse Gas Protocol*

# Align Governance to Support Your Targets



**Commit to publicly disclose climate-related financial risks** in Annual Shareholder Report in accordance with the requirements of the TCFD.

**Assess climate change scenarios** against Business Strategy and Asset Investment Plans.

**Undertake Climate Risk Assessments (financial & physical)** on 100% of New Investments/ Bids as part of responsible investment criteria.

**Put a shadow price on Carbon.**

**Assess and publicly report climate related risks** on all major projects and investments.

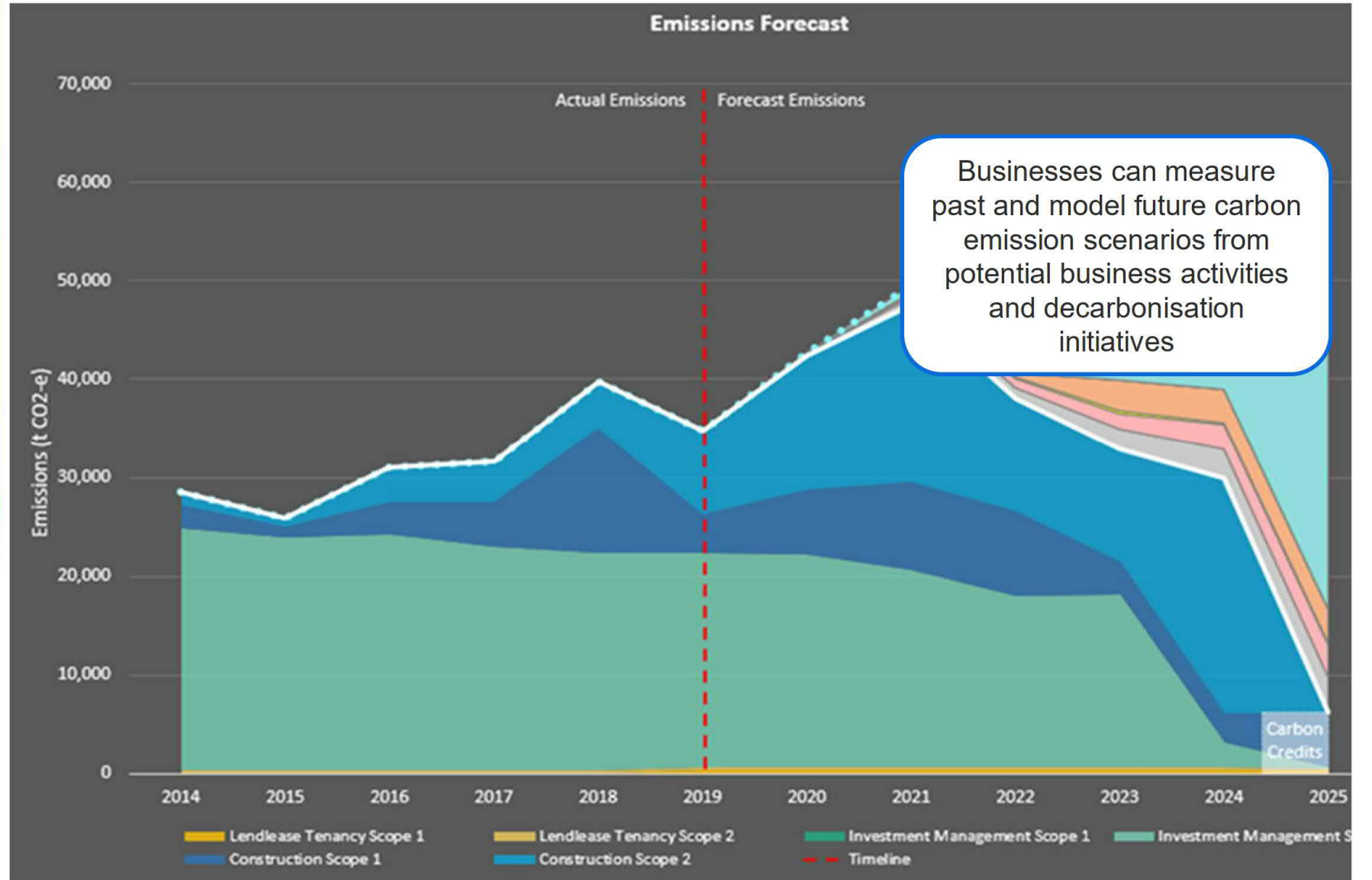
	Where we are today	Priorities to 2021
<b>Governance</b>	<ul style="list-style-type: none"> <li>Board oversight: engagement through Sustainability Committee three times per year</li> <li>Management's role: engagement through Quarterly Business Review (QBR) processes</li> <li>Working committees: TCFD Steering Committee and Global Sustainability Leadership Team updates</li> </ul>	<ul style="list-style-type: none"> <li>Continue to strengthen and improve climate risk governance</li> </ul>
<b>Strategy</b>	<ul style="list-style-type: none"> <li>Updated Sustainability Framework</li> <li>Four Lendlease climate scenarios created for scenario planning (see below)</li> </ul>	<ul style="list-style-type: none"> <li>Stress test business strategies using four climate scenarios</li> <li>Identify risks and opportunities for each scenario</li> <li>Set metrics and targets relevant to business outcomes</li> <li>Engage with stakeholders across our value chain</li> </ul>
<b>Risk management</b>	<ul style="list-style-type: none"> <li>Climate-related risks integrated into Risk Committee</li> <li>Climate-related risks integrated into Group Risk Appetite Framework</li> <li>Acute physical risk analysis undertaken across portfolios</li> <li>Shadow price on carbon integrated into Investment Committee investment decisions – \$20USD/Tonne in 2020, rising to \$100USD/Tonne in 2030 and \$140USD/Tonne by 2040</li> </ul>	<ul style="list-style-type: none"> <li>Continue to integrate climate-related risks into our Risk Management Framework</li> <li>Continue analysis of physical and transitional supply chain and market risks</li> <li>Disclosure of climate-related financial impacts</li> </ul>



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# Measure/ Model Business & Carbon Scenarios

Modelling the carbon impacts of your Business Financial forecasts and new business/ investment opportunities will provide a clearer outlook on your Net Zero Carbon journey.



# 4

## Responsible Investment Filters

Develop robust filters that assess sustainability related risks/opportunities into quantitative and qualitative terms.

Ensure your investment filters align to UN Principles of Responsible Investment, TCFD and your own Sustainability Targets.

Key Requirements		Response
Strategy	Is there a sustainability strategy aligned to the 3 Imperatives and 6 Focus Areas of the Sustainability Framework and the sustainability targets?	Yes/No, if No then why
Commercial	Is the sustainability vision / strategy / plan accounted for in the commercial assessment and have resources been identified and budgeted?	Yes/No, if No then why
Social	Have social value outcomes been identified and have mechanisms been put in place to measure the social value on this project?	Yes/No, if No then why
Environment	Has a climate-related risk assessment been completed and identified risks mitigated?	Yes/No, if No then why
	Does the project positively or negatively impact our 1.5°C alignment, net zero carbon scope 1&2 by 2025 or absolute zero carbon by 2040 targets?	Yes/No, if No then why
3 <sup>rd</sup> Party Certifications	The Lendlease mandate is to achieve a top 2 tier green building rating/certification. Is this project compliant? List out the ratings e.g. Green Star 5 and 6	Yes/No, if No then why

Imperative	Focus Area	Opportunity	Risk
SUSTAINABLE ECONOMIC GROWTH	1. RESOURCES & MATERIALS	Key opportunities to create a leadership position in resources and materials	Key risks in terms of resources and materials
	2. ECONOMIC PROSPERITY	Key opportunities to create a leadership position in economic prosperity	Key risks in terms of economic prosperity
VIBRANT & RESILIENT COMMUNITIES & CITIES	3. CLIMATE ACTION	Key opportunities to create a leadership position in climate action	Key risks in terms of climate action
	4. COMMUNITY INCLUSION	Key opportunities to create a leadership position in community inclusion	Key risks in terms of community inclusion
HEALTHY PLANET AND WELLBEING	5. NATURE AND POLLUTION	Key opportunities to create a leadership position in nature and pollution	Key risks in terms of nature and pollution
		Key opportunities to create a leadership position in wellbeing	Key risks in terms of wellbeing

Develop robust investment filters for sustainability and provide training

Quantify budget and resources to ensure strategy is executed

Climate risk to include physical, transitional (financial) and alignment to targets

Social risks to be assessed and social value created to be measured

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# Sustainable Finance

The market has continued to grow in sustainable finance, providing new opportunities to support organisations in sustainable investment.

Building capability in organisational finance and treasury teams is needed to help understand the nuances of sustainability-linked loans, green bonds etc.



## **Lendlease raised \$800M Green Bond**

Lendlease has become the largest non-bank Australian Stock Exchange (ASX) listed issuer of green bonds to date.

Bond proceeds will be used to support the delivery of green buildings and are earmarked to eligible projects within Lendlease's \$110 billion global development pipeline – including 22 major urbanisation projects such as Sydney's Barangaroo, the UK's International Quarter London and Chicago's Southbank.

The bond was issued under a Sustainable Finance Framework aligned with the ICMA Green Bond Principles 2018, the Social Bond Principles 2020 and the Sustainability Bond Guidelines 2018.

The success of the bond paves the way for future issuance under the new Sustainable Finance Framework which has been established to facilitate future green, sustainable and social financing initiatives across Lendlease's global portfolio.

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# Decarbonise Construction

## Scope 1 & Scope 2 Emissions

Over 90% of Lendlease's Scope 1 Emissions comes from our Construction activities (based on our 2014-2020 data).

It's a long journey, so focus where it matters most and then build knowledge, capability and interest.

Reduce onsite fuel use via offsite Design for Manufacture & Assembly, prefabrication & digital twin efficiency

Implement energy transition solutions like biodiesel and renewable diesel

Maximise electrification of construction site plant and equipment.

Purchase Green electricity or Renewable Energy Certificates where possible

Purchase Carbon Offsets and IRECs for the remaining Scope 1 & 2 Emissions

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# Decarbonise Construction

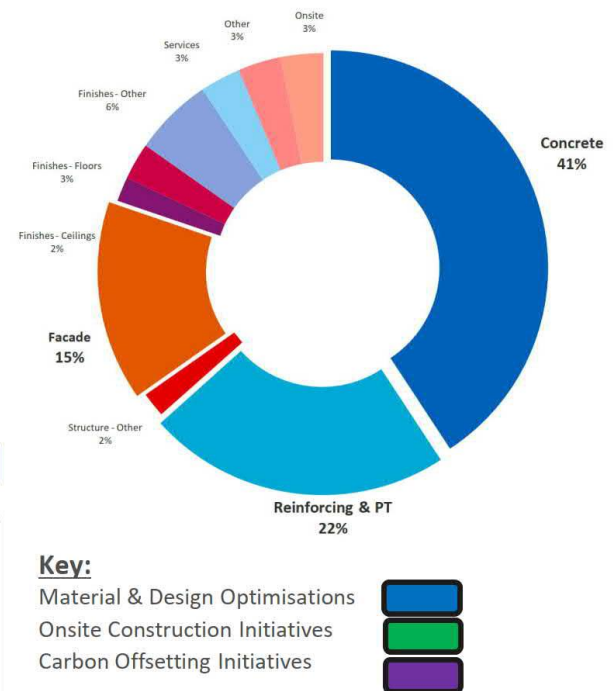
## Scope 3 Emissions

Over half of Lendlease's Scope 3 Emissions associated with Construction are associated with Concrete (41%), Steel (22%) and Façade (15%).

This Case Study was undertaken on Lendlease's Barangaroo South Development, Sydney.

## Barangaroo Case Study

<p><b>Temporary Site Lighting</b></p> <p>Temporary site lighting employed during the construction phase was low voltage LED with smart controls to minimise electricity demand.</p>	<p><b>Onsite Concrete Batching</b></p> <p>Transport emissions were significantly reduced due to efficient onsite concrete batching operations, enabling direct pumping and placement of concrete.</p>	<p><b>Efficient Electric Cranes</b></p> <p>Construction emissions from onsite crange was miminised by evaluating and selecting the most efficient electric cranes for use on the project.</p>
<p><b>Reinforcing steel</b></p> <p>A steel sourcing and billet tracking programme was implemented with our supplier to preference steel from lower carbon intensive mills; maximise post-consumer recycled scrap and waste materials in manufacture.</p>	<p><b>Concrete</b></p> <p>A competitive tender process challenged suppliers to push the envelope with low embodied carbon mix designs and the trialling of new emerging cement technologies with &gt;60% cement replacement.</p>	<p><b>Access Floors</b></p> <p>Access Floors certified as carbon neutral in response to the project's embodied carbon reduction commitment.</p>
<p><b>Façade Design</b></p> <p>The façade design and tender process facilitated detailed assessment of carbon reduction opportunities. This enabled the project to carefully optimise and balance the need for high a performance façade system while using significantly less material.</p>	<p><b>Formwork Systems</b></p> <p>Net embodied carbon savings through the use of unique formwork systems, reduced demand for high strength concrete mixes.</p>	
<p><b>Shared Basement</b></p> <p>Achievement of spatial efficiencies and reductions in building services due to shared basement infrastructure contribute to net reductions in embodied carbon across the site.</p>	<p><b>Carbon Neutral Carpets</b></p> <p>Base building supplied and installed carpets were preferred due to their carbon neutral certification.</p>	



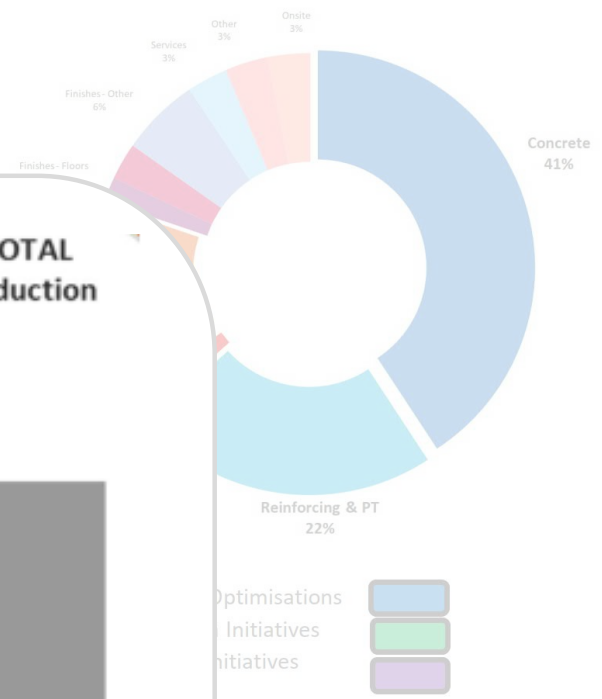
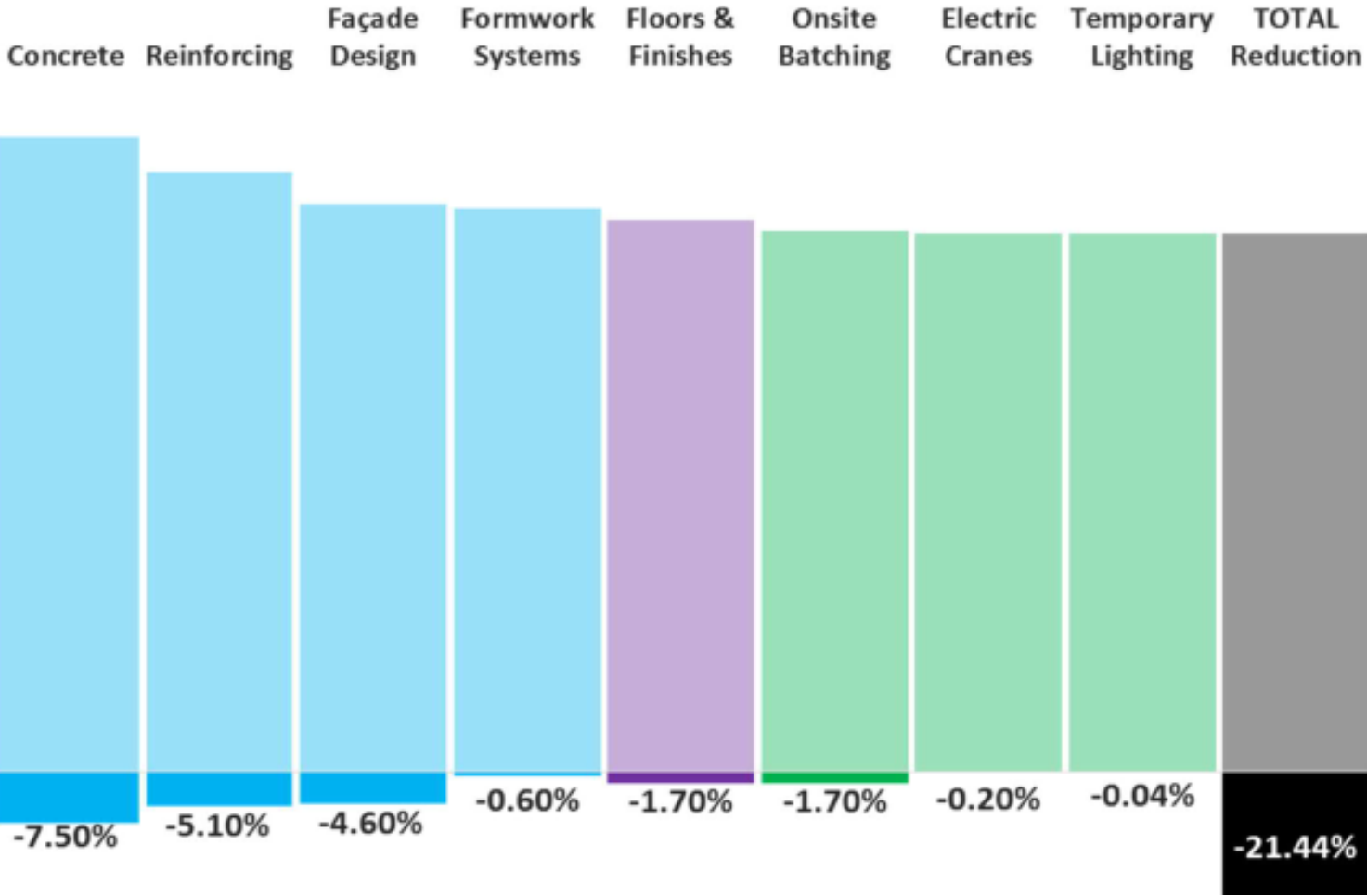
# Barangaroo Case Study

## Decarbonising Construction

### Scope 3 Emissions

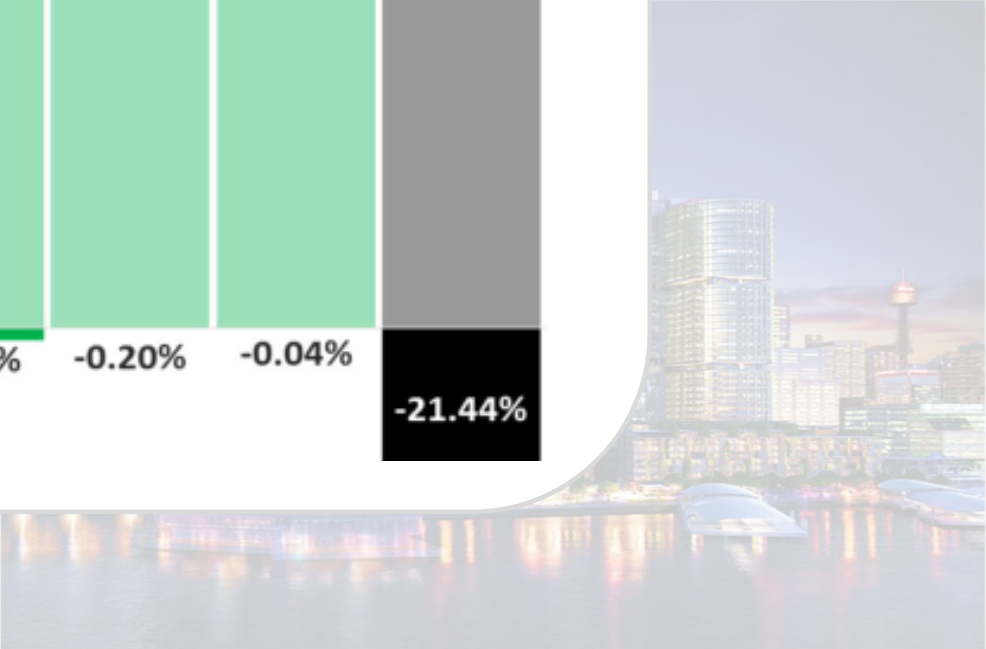
Over half of Lend Lease's Scope 3 Emissions associated with Construction are associated with Concrete (41%), Steel (22%), Façade (15%).

This Case Study was undertaken on Lend Lease's Barangaroo South Development, Sydney.



building services due to shared basement infrastructure contribute to net reductions in embodied carbon across the site.

installed carpets were preferred due to their carbon neutral certification.



# 7

## Climate Resilient Development

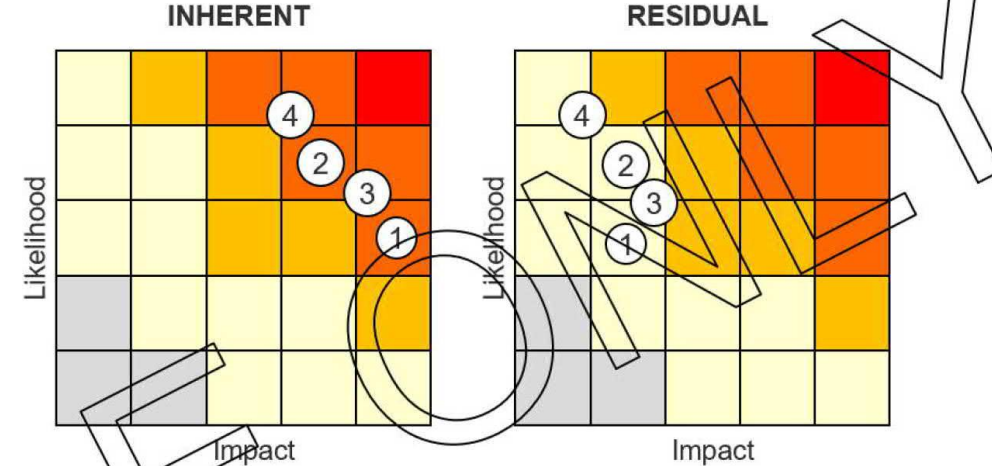
Physical climate risk assessments against RCP8.5 are performed internally across all major projects addressing development, design, construction and asset management operations.

These findings are then supplemented by external technical advice.

### CLIMATE RELATED PHYSICAL RISKS & OPPORTUNITIES

#### PHYSICAL CLIMATE RISKS ASSESSED

Risk	Impact Description	Rating
River Flood	River flood exceeding design event	Large
Urban Flood	Rainfall inundation exceeding design event	Large
Sea Level	Sea level and storm surge inundation	Large
Wind	Increase Asset damage & incidents	Medium
Hail	Damage to Assets	Low
Tornado / Cyclone	Melbourne not prone to Tornado / Cyclones	V Low
Heat Wave	Wellbeing of workers and public affected	Large
Cold Spell	Wellbeing of workers and public affected	Low
Drought	Increased risk associated with landscaping	Low



#### MATERIAL PHYSICAL CLIMATE RISKS IDENTIFIED WITHIN PROJECT TIMEFRAME – BY 2049

	Risk Description	Scenario	Inherent Risk Rating	Management Strategy	Residual Risk Rating	Fall-back Plan
1	Storm surge impacts road network and access	Resignation Polarisation	Large Impact in 2049	<b>SHORT-TERM COMMERCIAL – ISR Policy with \$150k deductible per event</b> Long-term (up to 2044 ) working with State to address adjustments to the Road network	Low Impact in 2049	Work with State to support Transport on Network to minimise Stakeholder impact
2	Rainfall exceeds design limits cutting off areas of network	Resignation Polarisation	Large Impact in 2049	<b>COMMERCIAL – ISR Policy with \$150k deductible per event</b> Working with State as part of a Network Strategy to address known and unknown Hot Spots	Low Impact in 2049	Not Required
3	Heat impacts wellbeing of public and workers	Resignation Polarisation	Large Impact in 2049	Working with State as part of a Network Strategy and incorporate into a Severe Weather Plan	Low Impact in 2049	Work with State to support Transport on Network to minimise Stakeholder impact
4	Water restrictions affecting landscape	Resignation Polarisation	Large Impact in 2049	Working with State as part of a Network Strategy and incorporate into a Severe Weather Plan	Low Impact in 2049	Work with State to support Transport on Network to minimise Stakeholder impact

- Built Environment Initiatives
- Community Resilience Initiatives

# The Exchange, TRX

## Resilient Placemaking

As part of our planning and design process, all developments that Lendlease undertakes includes an initial assessment of climate-related, environmental and social risks, mitigation and adaptation measures.

### Thermal Comfort

Buildings are designed to exceed compliance standard (20% improvement over ASHRAE) and will be equipped with high performance glazing to improve thermal comfort.

### Financial Position

The precinct is designed for 24-hour utilisation and assets that are complementary to one another, providing the perfect opportunity for a live-work-play community.

### Passive Design

Building orientation, awning structures, trees and lush vegetation, green roofs and high albedo paving surfaces have been planned to mitigate urban heat island effect.

### Biophilic Design

Sky gardens, vertical gardens and green spaces of the plaza and promenades will improve outdoor air quality for precinct users.

### Connectivity

TRX is supported by first class infrastructure and connectivity, including KL's largest MRT interchange, access to the DUKE & MEX highways, SMART Tunnel and other primary arteries of KL such as Jalan Tun Razak & Jalan Imbi.

### Flood Mitigation

Local drainage system will undergo a significant upgrade to improve capacity and reduce site overflow and downstream flash flooding.

### Indoor Air Quality

MERV14 filtration will be installed in all commercial buildings to maintain high levels of indoor environmental air quality.

### Healthy Precinct

The precinct has the opportunity to create stronger community resilience via improved physical and mental wellbeing for its visitors and occupants with its activated outdoor spaces and expansive greenery.

### Recycled Water

Precinct recycled water treatment will recover 80% of wastewater for toilet flushing, landscape irrigation, and cooling towers, reducing demand for potable water by more than 50%.

### Flood Mitigation

Drainage cells under the landscaping areas gets water quickly off the roof to avoid flooding within the Park.

### Community Connections

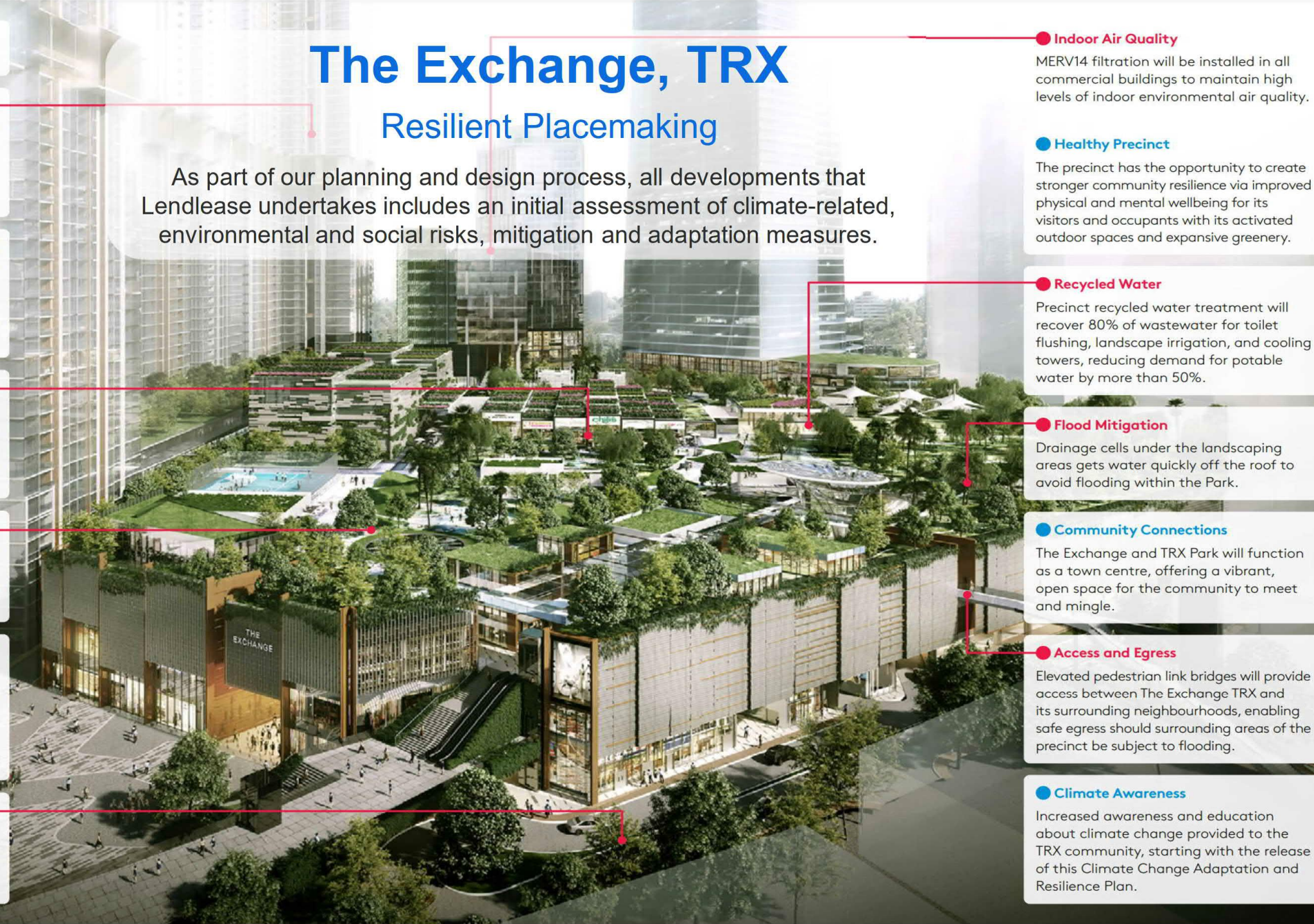
The Exchange and TRX Park will function as a town centre, offering a vibrant, open space for the community to meet and mingle.

### Access and Egress

Elevated pedestrian link bridges will provide access between The Exchange TRX and its surrounding neighbourhoods, enabling safe egress should surrounding areas of the precinct be subject to flooding.

### Climate Awareness

Increased awareness and education about climate change provided to the TRX community, starting with the release of this Climate Change Adaptation and Resilience Plan.





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# Investment Management & Net Zero Carbon



## Lendlease Ranks as World's Number 1\* in Sustainability

**Top Green Building Ratings** for *all* assets under management

SG Global REIT is ranked **No.1 in Asia listed Funds** in GRESB

Lendlease Asia Funds take **Top 5 leadership positions** in GRESB

via

**Sustainability integrated into Asset Business Plans** for all our Funds under Management

**Green Leases and Sustainability Action Plans** for all Assets

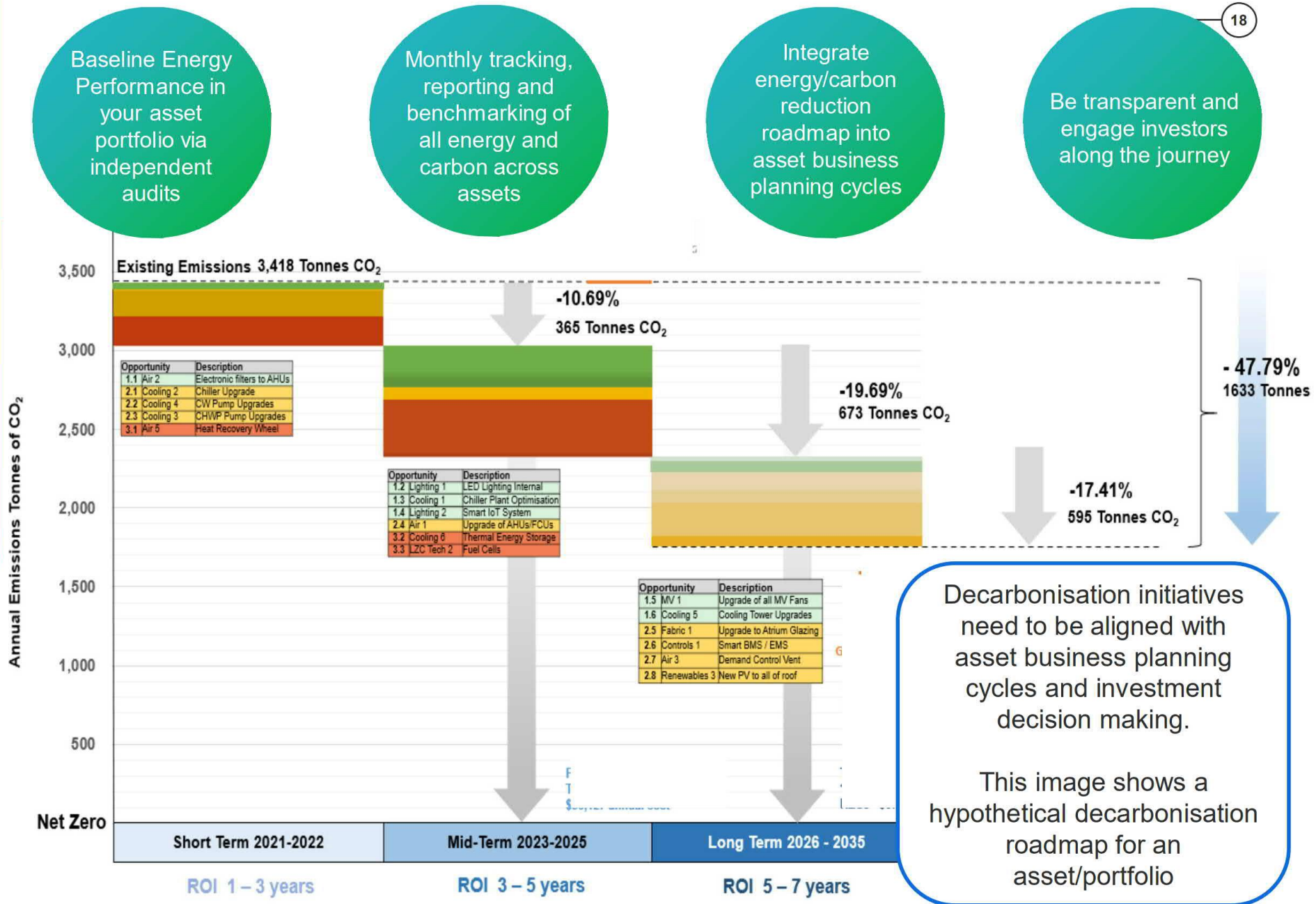
**Maximise Renewable Energy Sources** across Assets

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# Investment Pathways to Net Zero Carbon

Develop a clear understanding of base building and tenant contributions to carbon emissions while also considering your own equity stake.

Identify asset energy/carbon measures (CAPEX/OPEX) and create an investment roadmap to Net Zero Carbon.





## **BUILT ENVIRONMENT, CLIMATE RESILIENCE & FINANCE**

### **Align Business Strategy, enterprise risk and climate scenarios**

- Finance, Treasury & Risk teams need be aligned on organisational response to climate risk
- Investment decision-making must reinforce policy and sustainability targets

### **Better utilise the data from your organisation**

- Operational performance data (energy, emissions, water, waste & materials procurement data are critical to establish baselines)
- Transform data into simple insights that can improve efficiency and reduce impacts

### **Invest in your people & build capability**

- Grow technical expertise in-house to ensure you develop the right skills and knowledge in your industry
- Build capability at all levels – from Executive Leadership Teams to site operations

A wooden planter box filled with lush green plants sits on a rustic wooden floor. The floor is made of wide, dark-stained wooden planks. The planter box is made of light-colored wood and is partially filled with soil and green foliage. The text "Any Questions?" is centered over the image.

**Any Questions?**

