ADBRI
Building Australia since 1882

Net Zero Emissions – Roadmap to 2050

Stakeholder Presentation

NET ZERO

We acknowledge Aboriginal and Torres Strait Islander peoples as the Traditional Owners of the lands and waters of Australia.

We recognise their continuing custodianship of Country and culture and pay respect to their Elders past, present and emerging.

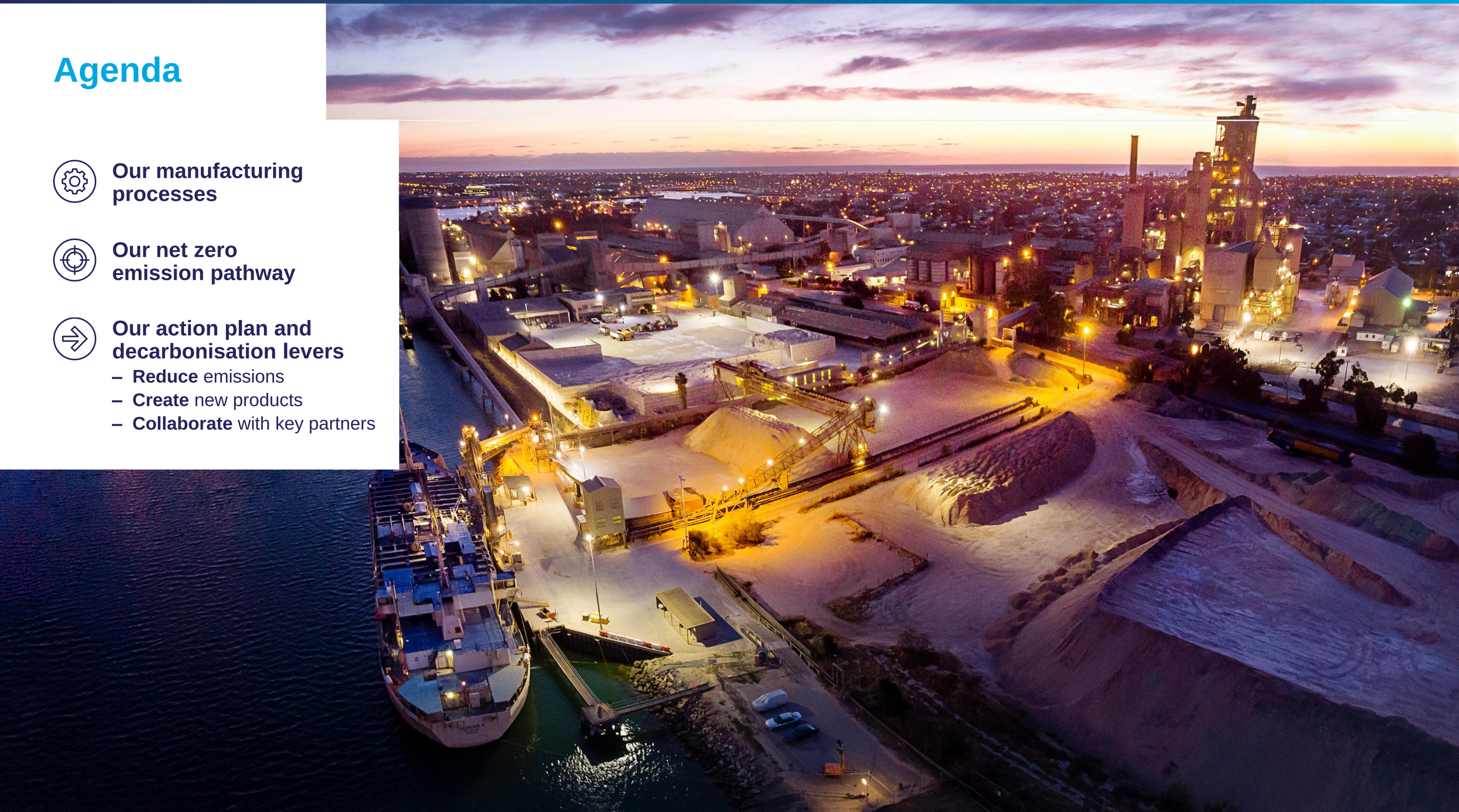
Agenda

Our manufacturing processes

Our net zero emission pathway

Our action plan and decarbonisation levers

- **Reduce** emissions
- **Create** new products
- **Collaborate** with key partners



Essential materials for the low carbon economy

Building a better Australia

Adbri is one of Australia's largest cement, lime, concrete and masonry producers.

NET ZERO

Adbri's goal to operate at net zero emissions by 2050 aligns with our purpose of Building a Better Australia.

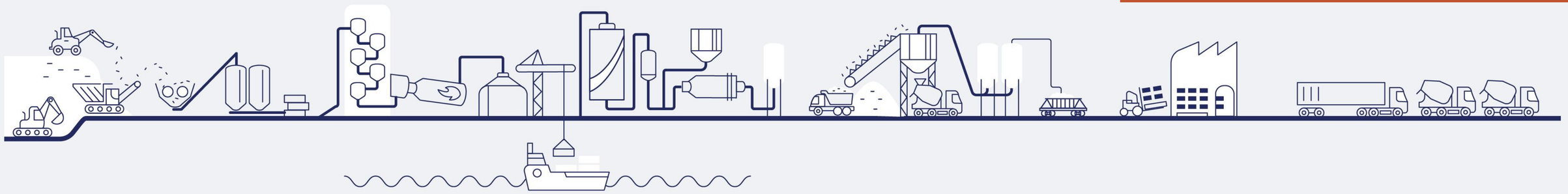
Contributing to the low carbon economy

- We believe cement, concrete and lime are essential materials to the global economy in the transition to a low carbon economy, supplying key industries including environment, infrastructure, energy, mining and agriculture.
- There are no obvious products available today that can substitute for cement, concrete and lime in mainstream applications, at scale.

Our manufacturing process

Clinker, cement, concrete, aggregate and masonry

49%
of our total operational emissions in FY20



Raw material extraction (incl. aggregate production)	Clinker production	Cement production	Concrete production	Masonry production	Transport & logistics
3%	**84%**	**8%**	**<1%**	**<1%**	**3%**
• Onsite diesel • Electricity	• Process emissions (60%) • Kiln fuels (21%) • Electricity (3%) • Non-kiln fuels (<1%)	• Electricity	• Electricity • Onsite diesel	• Electricity • Onsite diesel	• Diesel for transport

Share of emissions and source of emissions (%) – Total operational emissions in FY20 (1,137 $ktCO_2e$).

Lime

51%
of our total operational emissions in FY20

Raw material extraction (incl. aggregate production)

Lime production

Share of emissions and source of emissions (%) – Total operational emissions in FY20 (1,196 $ktCO_2e$).

<1%
- Onsite diesel
- Electricity

60%
- Process emissions

35%
- Kiln fuels

<1%
- Non-kiln fuels

4%
- Electricity

Net Zero by 2050 is core to our business strategy

Targets		Scope 1	Scope 2	Scope 3
Short-term target FY24	7% absolute reduction in operational emissions by FY24 vs FY19 baseline	●	●	
Medium-term targets FY30	20% reduction in cement emissions intensity (kg CO_2e net/tonne) by FY30 vs FY20 baseline	●		
	10% reduction in lime emissions intensity (kg CO_2e/tonne) by FY30 vs FY20 baseline	●		
	100% zero emissions electricity[1] supply by FY30		●	
Long-term goal 2050[2]	Net zero emissions Scope 1 + Scope 2 + Scope 3	●	●	◌ 3

Scope 1
Emissions are greenhouse gas (GHG) emissions generated from the direct combustion of fuels, for example gas, diesel and coal and from process emissions within our sites where Adbri has operational control.

Scope 2
Emissions are indirect GHG emissions associated with the purchase of electricity for our sites where Adbri has operational control.

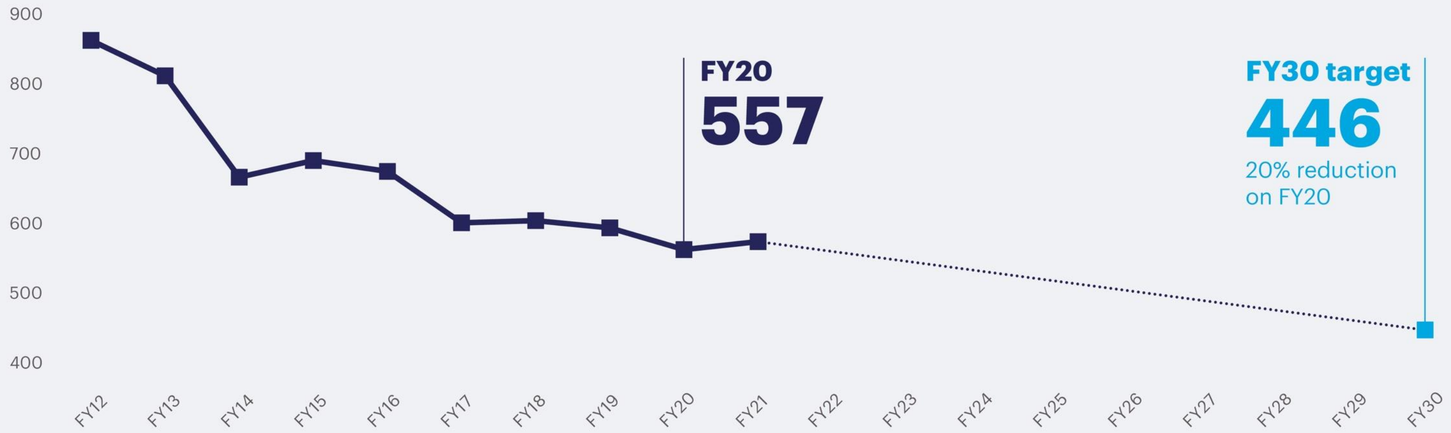
Scope 3
Emissions are all indirect GHG emissions across our value chain, excluding emissions from purchased electricity.

The targets are based on financial year (30 June).

1. Zero emissions electricity includes electricity from renewable generation and emerging technologies such as power generation using hydrogen. In the event that firming capacity is required from non-renewable sources, we intend to offset the associated emissions.
2. Our long-term 2050 goal is heavily dependent on the commercialisation of breakthrough technologies to reduce Scope 1 emissions. While Adbri is committed to investing in the development of these essential breakthrough technologies, there may be impediments to their adoption in our operations which may affect our ability to meet our goal, such as retrofitting to our existing plants.
3. Our pathway to achieving net zero Scope 3 emissions remains under development.

Cement and lime medium-term pathway

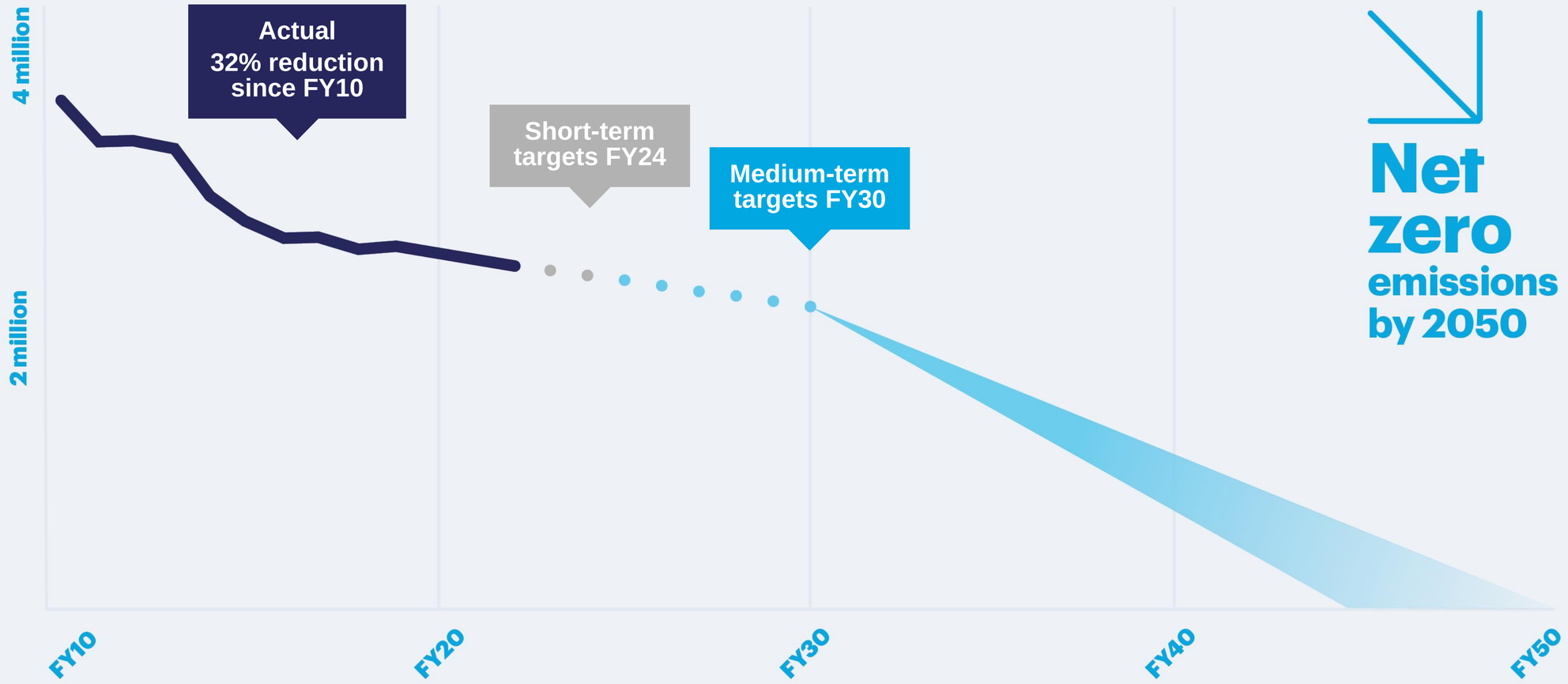
Cement emissions intensity historical performance and target commitment (kg CO_2e net/tonne cement)



Lime emissions intensity historical performance and target commitment (kg CO_2e/tonne)

Our indicative pathway to net zero emissions by 2050

Scope 1 and Scope 2 GHG emissions (tCO_2e)



Assumes:
Breakthrough technologies, such as carbon capture, storage (CCS), carbon capture, use and storage (CCUS), zero emissions process heat and zero emissions heavy vehicles, are commercialised and applicable to our operations post-2030.

Reduce, create and collaborate

Reduce
emissions

Create
new products

Collaborate
with key partners

“Creating a sustainable and successful business for the benefit of all stakeholders.”

Reduce Emissions

Reduce emissions

Cement

- Process and energy efficiency improvements
- Increase decarbonated raw feed
- Increase alternative fuels
- Increase the use of SCMs
- Diesel reduction and replacement

Lime

- Process and energy efficiency improvements
- Explore options for alternative fuels
- Fuel switching

Electricity

- Process and energy efficiency improvements
- Zero emissions electricity

Breakthrough technologies

- Breakthrough technologies

▲ RDF has been used at our Birkenhead plant since 2003

▲ Birkenhead kiln

▲ 2.1MW solar PV rooftop installation Campbellfield Masonry site

Create: Lower carbon products

Increased use of SCMs

- Planning to increase the SCM share of overall cementitious sales to 36% by 2030 against our 2020 baseline of 21%.
- Adbri's clinker to cement ratio[1] at 77% was better than the Australian average of 84% in 2020[2].

Adbri Innovation Council

- Established to prioritise, assess and recommend initiatives to develop lower carbon products across the business.
- We are working on Environmental Product Disclosures (EPDs) to inform choice.
- Pilot and trial innovative products across a range of end uses.
- Engaging with organisations that are key in developing and updating product standards.
- Work with our construction and infrastructure customers to accelerate the acceptance and adoption of these materials.

1. The clinker to cement ratio is an industry metric which reflects the utilisation of SCMs. By decreasing the amount of clinker and increasing the SCM content, the emissions intensity of cement can be reduced, while still producing a durable, resilient product that meets stringent standards.
2. This 2030 SCM target builds on the short-term target of 24% by 2024 against our baseline of 21% in 2019.

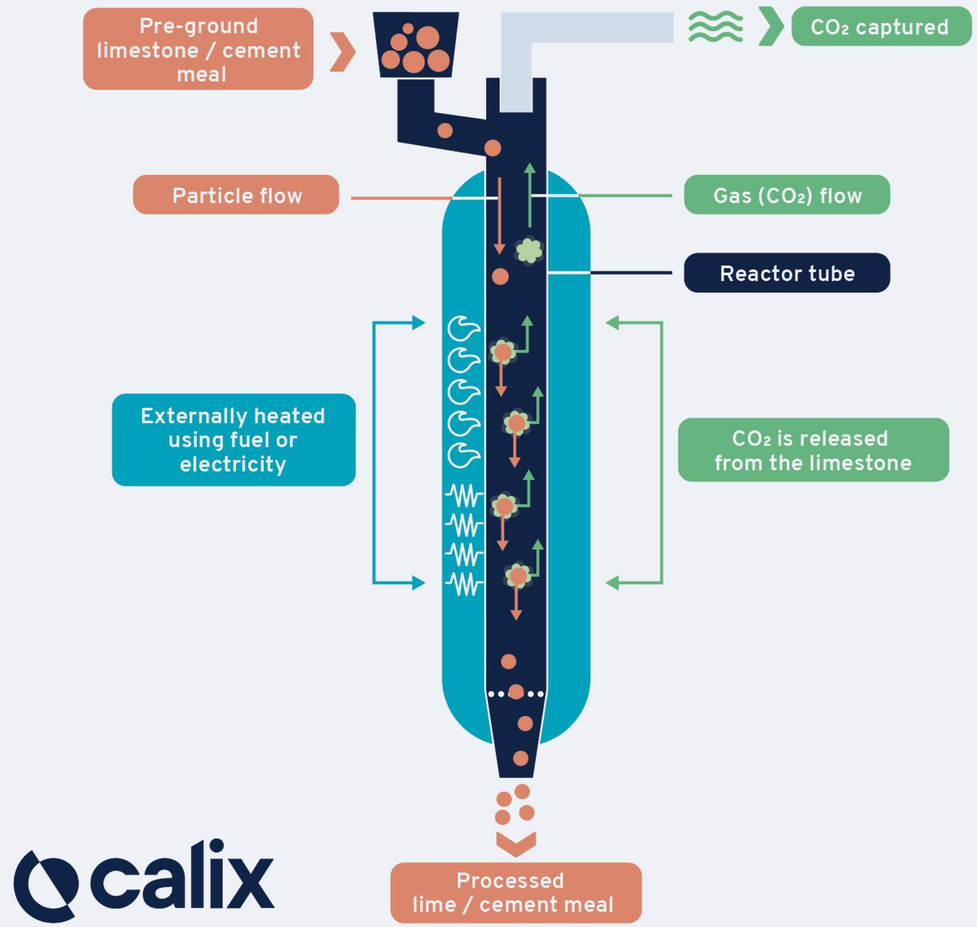
Collaborate: Emerging and breakthrough technologies

Carbon capture technologies

- CCS and CCUS[1] could present a technically viable pathway to zero emissions manufacturing for both lime and cement.
- Whilst there are elements of this technology available today, commercial scale and cost hurdles remain, and there may be other barriers to applying CCS/CCUS technology to Adbri's business.
- Internationally, a range of CCS/CCUS technologies are being used for large-scale demonstration projects.

Breakthrough technologies

- Zero emissions process heat for clinker and lime kilns
- Potential electrification of kilns
- New sources of SCMs



▲ New technology for CO_2e capture for clinker and lime manufacturing. Image courtesy of Calix

1. CCS and CCUS – carbon, capture and storage (CCS) and carbon, capture, use and storage (CCUS)

Collaborate: Partnerships

Partnership approach

- Adbri is partnering with Calix to develop a technology which allows pure CO_2 to be captured in lime production.
- Core partner in the Heavy Industry Low-carbon Transition Co-operative Research Centre (HILT CRC).
- Expanding partnerships to accelerate the commercialisation of breakthrough technologies to reduce emissions and create new products.

Partnerships:

HILT CRC
Heavy Industry
Low-carbon Transition

SmartCrete CRC

MECLA

calix

Associations:

CEMENT CONCRETE & AGGREGATES AUSTRALIA

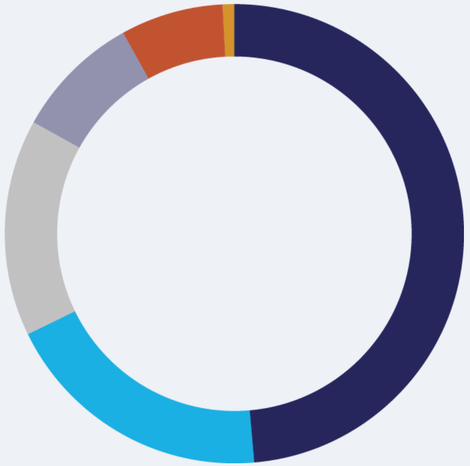
vdz

MANUFACTURING AUSTRALIA

CEMENT INDUSTRY FEDERATION

Decarbonisation levers

Decarbonisation levers FY20–FY30[1]



49%
Zero emissions electricity

19%
Fuel switching

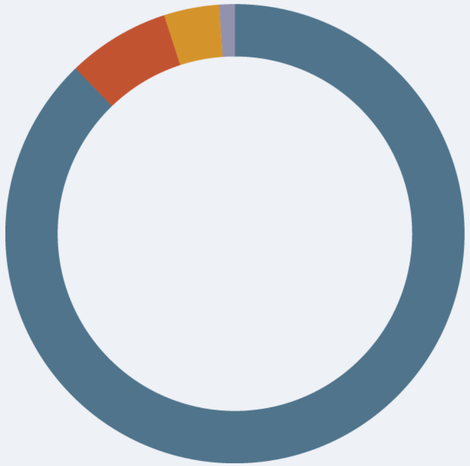
15%
Increase alternative fuels

9%
Process and energy efficiency improvements

7%
Increase decarbonised raw feed

1%
Diesel reduction and replacement

Decarbonisation levers FY30–FY50[1,2]



88%
Breakthrough technologies

7%
Increase decarbonised raw feed

4%
Diesel reduction and replacement

<1%
Process and energy efficiency improvements

1. The percentages represent the contribution of each lever to the estimated absolute emissions reduction in each timeframe.
2. Breakthrough technologies may include CCS/CCUS for the cement and lime sectors, zero emissions process heat, or other technologies that have yet to be identified.

Implementation

External enablers

- Technology commercialisation
- Competitively priced energy
- Raw material availability
- Market support for lower carbon products
- Policy support

▲ Adbri pavers were used at the Adelaide Oval, South Australia for their permeability and the associated benefits to the heritage listed fig trees

Investing in our action plan and decarbonisation levers

- Adbri will continue to assess options to invest in emissions reduction actions.
- As we work towards more detailed scoping on near term emissions reduction initiatives, projects will be assessed as part of our capital allocation process.
- We will build our capability in the business to include carbon price sensitivity analysis in our investment decisions.
- Executive remuneration has been linked to both financial and sustainability targets, including climate change KPIs.

Reporting

- Committed to phasing in reporting in accordance with the Task Force on Climate-Related Financial Disclosure framework
- We will report performance against our targets in our Sustainability Report.

Summary

Our short-term 2024 target

Scope 1 and 2 emissions

7% ↘
absolute reduction target by FY24 vs FY19

4% ↘
reduction achieved since FY19

32% ↘
reduction achieved since FY10

Our medium-term 2030 targets

Cement

20% ↘
reduction in cement emissions intensity kg $C0_2e$ net/tonne of cement from a FY20 baseline of 557kg CO_2e net/tonne

Lime

10% ↘
reduction in lime emissions intensity kg $C0_2e$/tonne of lime from a FY20 baseline of 1,100kg CO_2e/tonne

Electricity

100% ↗
zero emissions electricity from a FY20 baseline of zero

Our actions

Reduce emissions

- Improve process and energy efficiency
- Increase use of alternative fuels
- Increase use of supplementary cementitious materials (SCMs)
- Grow expertise in breakthrough technologies

Create new products

- Develop new SCMs
- Innovate and develop lower carbon products
- Launch Environmental Product Declarations (EPDs) to inform choice
- Create product awareness to grow market demand

Collaborate with key partners

- Technology partners: innovation across our operations
- Customers: new product specifications
- Governments: policy settings
- Suppliers: inputs into our processes
- Joint venture partners: knowledge sharing and shared goals

Our long-term 2050 goal

Net zero emissions

Q&A

Nick Miller
Managing Director and CEO

Rebecca Irwin
Chief Sustainability & People Officer

Theresa Mlikota
Chief Financial Officer

Our historic performance

Figure 1 – GHG emissions

	FY21	FY20	FY19
Total operational GHG emissions (Scope 1 and 2) tCO_2e[1]	**2,289,449**	2,332,553	2,387,020
Scope 1 GHG emissions tCO_2e[1]	**2,092,331**	2,125,121	2,156,481
Scope 1 GHG emissions tCO_2e[1]	**197,118**	207,432	230,539
Scope 3 GHG emissions tCO_2e	**1,012,808**	N/A	N/A

1. GHG emissions are measured and reported in line with the *Australian National Greenhouse and Energy Reporting Act 2007*.

Figure 2 – GHG emissions by product Scope 1 + Scope 2 kt CO_2e

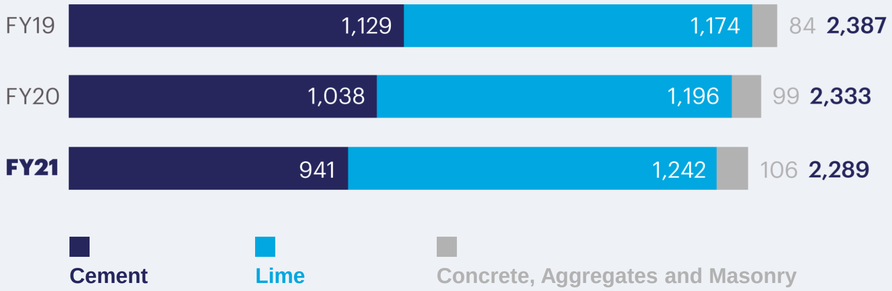
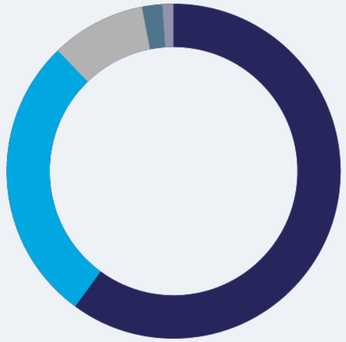


Figure 3 – FY21 Operational GHG emissions (Scope 1 + Scope 2) by source



Process emissions (lime and clinker) 60%

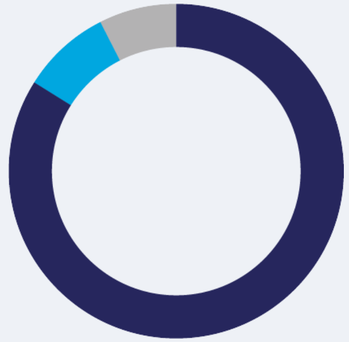
Kiln fuels 28%

Electricity 9%

Non-kiln onsite fuels 2%

Transport fuels 1%

Figure 4 – FY21 Scope 3 emissions

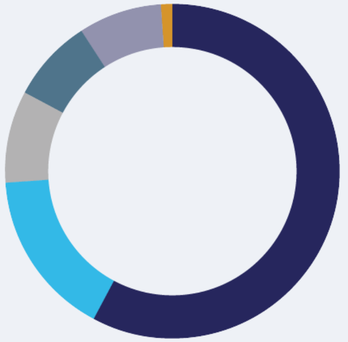


Purchased goods 84%

Upstream fuel & energy-related activities 9%

Upstream transportation & distribution 7%

Figure 5 – FY21 Energy consumption by source (TJ)



Natural gas 58%

Coal 16%

Electricity 9%

Refuse derived fuel 8%

Liquid fuels 8%

Recovered waste oil 1%

Our historic performance

Figure 6 – Scope 1 and Scope 2 operational GHG emissions vs clinker and lime production

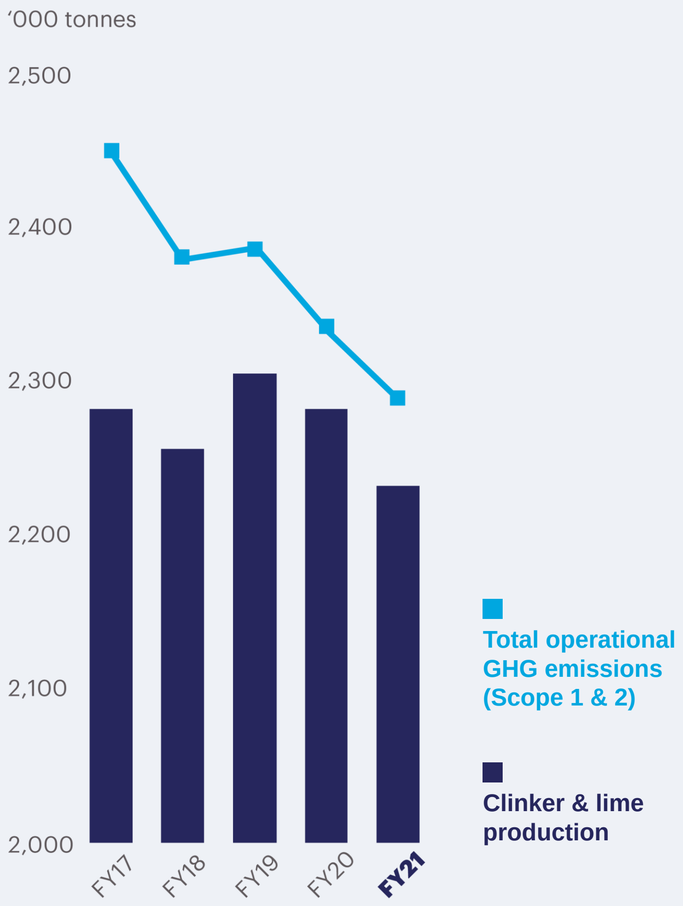


Figure 7 – Reduced energy consumption FY19–FY21 (GJ)

Figure 8 – Thermal efficiency of our clinker manufacturing (GJ/t clinker[1])

1. South Australian integrated clinker/cement plants only.

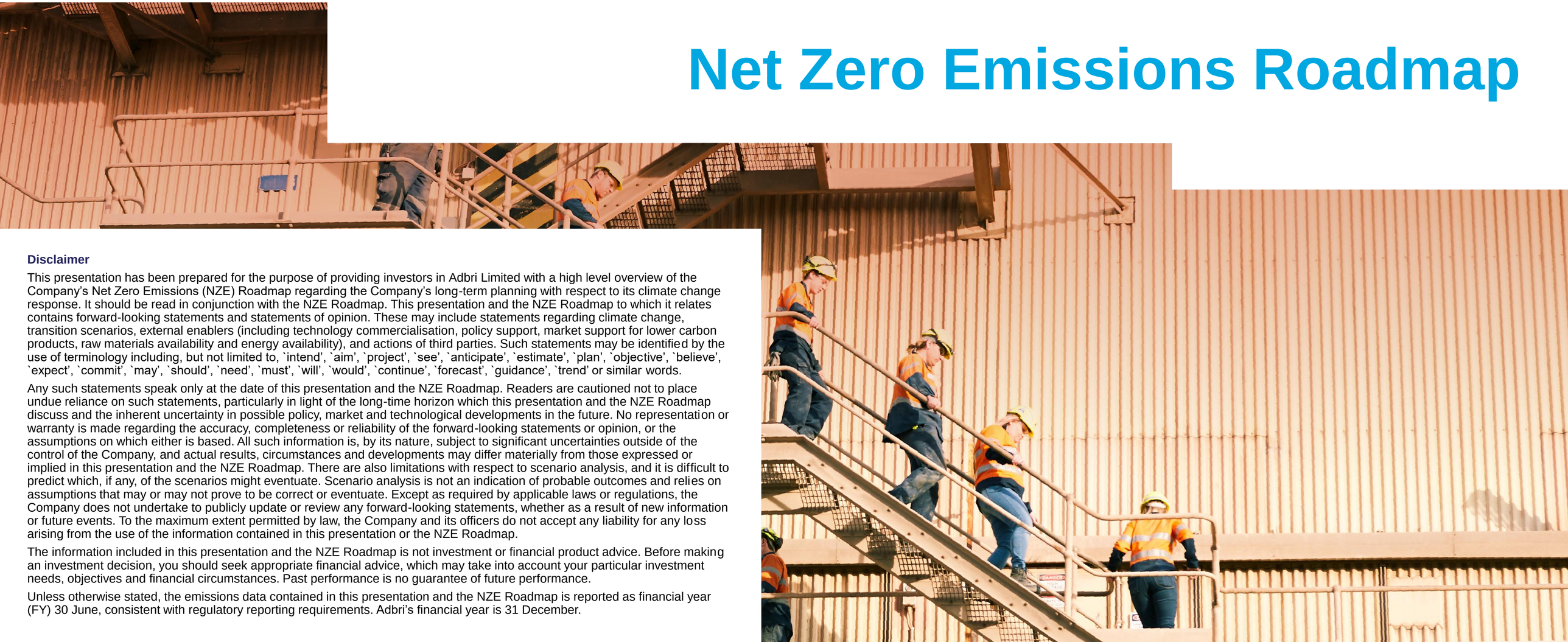
Figure 9 – Comparing Adbri's clinker performance against the Australian industry average performance

Metric	Australian industry average 2020[2]	Adbri FY20	Adbri's relative performance
Thermal substitution rate (%) (alternative fuels)	18	25	●
Clinker/cement ratio (%)	84	77	●
Clinker Scope 1 emissions intensity (kg CO_2e/tonne clinker)	791	735	●

Figure 10 – Clinker emissions intensity – Scope 1 emissions (kgCO_2e/tonne clinker)[2]

2. *Decarbonisation Pathways for the Australian Cement and Concrete Sector* 2021 by VDZ on behalf of The Cement Industry Federation; Cement Concrete and Aggregates Australia; SmartCrete CRC; RACE for 2030 CRC http://cement.org.au/wp-content/uploads/2021/10/Decarbonisation_Pathways_Australian_Cement_and_Concrete_Sector.pdf

Net Zero Emissions Roadmap



Disclaimer

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Unless otherwise stated, the emissions data contained in this presentation and the NZE Roadmap is reported as financial year (FY) 30 June, consistent with regulatory reporting requirements. Adbri's financial year is 31 December.